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ÆERATED BREAD.

THE self-styled "leading journal," the *Times*, is particularly unfortunate when it steps out of its own proper province, and discourses of scientific subjects. It has not yet informed us that England is about to join the British Empire, but its wonderful and parallel statement that Prussia proposes entering into the Zollverein will not speedily be forgotten. Some years since, a proposal was made to manufacture bread without the aid of yeast, by means of hydrochloric acid and bicarbonate of soda, producing by their reaction in the dough chloride of sodium, or common salt, and carbonic acid gas; which latter acted in raising the dough in the same manner as that produced by fermentation with yeast. Owing to the advocacy of the *Times*, the pamphlet describing this process passed through numerous editions, and reached an enormous circulation; and some hundreds of bushels of flour were wasted in experiments in some thousands of kitchens. The plan, however, which was to save a mere fraction of a farthing in every quartern loaf—and, of course, so many millions to the whole nation that the national debt could have been paid off without difficulty—rapidly fell into deserved desuetude; corrosive acids and chemical weights and measures are perfectly incompatible with kitchen manipulation; and, moreover, the bread so made was dry, cakey, and would not toast. Precisely the same objection applies to the aerated bread, produced by making the dough under pressure, with aerated water, and which it is the whim of the *Times* to puff at the present time.

This bread has been before the public some two years; latterly the manufacture has been discontinued, because it did not sell—the *Times* says that it was because the factory was situated out at Bermondsey!—the true reason being that the bread was not liked by the public at large. Bread raised without fermentation has a totally different structure from that fermented with yeast; the *pile* is different, and the taste dry and unpleasant. We believe that the vital action of the yeast-plant produces a change in the constituents of the flour that it is impossible to imitate by the mere evolution of carbonic acid in the dough, or by any known chemical or mechanical means; and we do not believe that bread so manufactured will ever meet the taste or requirements of the public.

The *Times* bases its recommendation of the plan of Dr. Daughish on the report of Mr. Tremenheere to the Home Secretary, on the condition of the journeymen bakers. Mr. Tremenheere, finding that the conditions under which bread is usually manufactured, in the bakehouses of the majority of the London bakers, are offensive and objectionable in the extreme, comes to the hasty and unfounded conclusion that no improvement can be effected until the whole system is based on a new foundation; and Dr. Daughish's plan having been exhibited to him, he thinks that it would be a remedy for all the evils that afflict the workers in the trade.

We are not aware that Mr. Tremenheere is either a scientific or a practical man; his report rather tends to the conclusion that he is neither the one nor the other. The scientific objections to the plan we have already stated; the practical ones are

still stronger. We will for the moment set aside the circumstance that the public do not like the bread (as proved by the fact that the manufacture was given up, as they did not buy it), and take up the matter in a business point of view. The apparatus that is suggested for the use of the trade is to cost £250, for the smallest bakery, doing even less than twenty sacks per week. On looking into the *Post Office Directory*, we find that there are no less than 2,500 bakers in London alone; if we regard none of them as doing a greater trade than twenty sacks weekly, the cost of introducing this plan into the metropolis would amount to the moderate sum of £625,000. But it is suggested that the present race of bakers should become middle men, or agents, standing between the large factory and the public. Bearing in mind the effect of the brewers' monopoly, and that of the *Times* itself, before the abolition of the stamp duty, we really see no cause to advocate the change from the free trade of the present system to the establishment of a gigantic series of factories for the supply of all London.

The abuses of the present system are all capable of being removed, without any such alteration. Slaughter-houses are under supervision by the officers of the Board of Health; there is no reason why bakehouses should not also be placed under similar control. No bakery should be permitted in an underground cellar, or in any offensive locality; and all should be provided with means of effectual ventilation.

The dirt and filth of many of our bakehouses is an accidental, not an essential condition of the existing mode of manufacture. The labour of kneading and mixing the dough is the greatest objection to the present plan; but there is no reason whatever why this should not be performed by machinery—the simple, natural, and effective plan of fermenting by yeast being still continued.

Several most effective machines have been designed for the purpose of kneading the dough—one of these may be seen in the eastern *annexe* of the Great Exhibition; and Stevens's machine is in most successful use in many of the largest public establishments, and is also equally adapted to small bakers and to private families. There is no doubt but that other machines, equally efficacious, may be invented without infringing on these patents. The problem as to the best mode of effecting the uniform admixture of a quantity of flour and water is not likely to remain unsolved, as soon as the attention of mechanists is directed to its solution.

Having devoted much attention to the subject for some years past, we feel warranted in maintaining the opinion that improvements, both in the manufacture of bread and the sanitary condition of the journeymen bakers, is rather to be sought for in improved machinery for mixing the dough, than in the substitution of chemical means for the universally approved method of fermenting by yeast.

THE "LANCET" ON THE JURIES ACT.

OUR clever, but unprincipled contemporary, the *Lancet*, never misses a chance of vilifying the chemists and druggists of the United Kingdom. Whenever an allusion to the body can be dragged into an article, we may confidently expect a torrent of abuse. The exemption from jury-service, lately granted to pharmaceutical chemists, has given the *Lancet* an opportunity of insulting all the members of the trade who have not profited by the new Act. To make the most of this opportunity, our contemporary has found it necessary to draw an imaginary line of demarcation between the two classes of chemists and druggists. The members of the Pharmaceutical Society, are "accomplished and practical gentlemen," but those pharmacists whose names do not appear on the books of the Society are stigmatized as "ignorant fellows," "dabblers in death-dealing substances," "a kind of rabble of chandler-shopkeepers, stationers, perfumers, and others." The article is reprinted in the *Pharmaceutical Journal* without one word of comment, but is preceded by an editorial article in which the *Lancet's* opinions are softly echoed. Though the editor

of the journal well knows that the exemption, which has been so absurdly designated "the druggist's franchise," was gained by a mere "fluke," he coolly remarks, when speaking of the imaginary difference in the respective qualifications of pharmacists and non-pharmacists, "It cannot be supposed that the difference is merely nominal which the Legislature has so prominently marked." We certainly prefer the undisguised hatred of the *Lancet* to the cat-like treachery of the *Pharmaceutical Journal*. We reprint below the entire article from the columns of our medical contemporary:—

"An important encouragement has been given, by a recent Act of Parliament, to that educational organization of the druggists and dispensing chemists, which we hold to be a measure that should be made universal. At one time, the body of chemists were entirely without organization; and any little chandler-shopkeeper, who chose to add drugs to his stock of tapes and dry-goods, stood in the same position as the accomplished and practised gentlemen who had duly educated themselves for the responsible task of following the therapeutic indications of physicians, and dispensing drugs to the public. For some people this system of free trade in poisons has still many charms, and they would remorselessly leave the lives of the community in the hands of uneducated vendors of poisons, such as that woman who sold pulv. opii. Ture. for pulv. rhei. Ture., under the impression that one kind of Turkey powder must be much the same as another, and, as she was out of the 'rhei,' she might send the 'opii,' which she did, thereby killing her customer. We confess that we have no sympathy with the kind of vested interest in poisoning which is claimed for dispensers of drugs of this class. We look forward to the time when the interests of life will not be thus trifled with. In no country of Europe but in England is the fanciful respect for inherent trade rights carried to the absurd extent of permitting any ignorant fellow who pleases to start a shop for the sale of poisons and the dispensing of drugs; and without the shadow of education, or with any false measure of information which his conceit may lead him to think sufficient, then and there to practise medicine over the counter, and to dabble in death-dealing substances. There are two classes: the pharmaceutical chemists, who submit to such an examination as guarantees their capacity for dispensing and preparing medicinal substances; and the outsiders, who have given no evidence of that qualification. Amongst the latter there are a number of very competent persons, but it is very well known that there are many of them who are totally and dangerously ignorant of the niceties of the difficult art which they practise: they include a kind of rabble of chandler-shopkeepers, stationers, perfumers, and others. When recently the Juries Bill was before Parliament, a clause was introduced by Mr. Powell, exempting the pharmaceutical chemists—that is, chemists who are members of the Pharmaceutical Society—from serving on juries. This clause was rejected by the House of Commons; but, by the wise persistence of the House of Lords, it has found a place in the Act as passed. The pharmaceutical chemists were able to obtain this exemption by proving that they are a body which can be defined by educational examination and registration; that their business is of a most responsible nature; and that it is most difficult and dangerous for the principal to leave his business, more particularly where there are only apprentices, or where the establishment consists of the proprietor only, in which case, when he is summoned, the shop or dispensary is usually left to the wife (if he have one), or to the porter, or errand-boy. The awful announcement of the jurymen in the celebrated case of Bardell v. Pickwick, was an efficient argument for the cause, which Lord Wensleydale pleaded with irresistible force. That chemist observed that he had 'left nobody but an errand-boy in his shop. He is a very nice boy, my lord, but he is not acquainted with drugs; and I know that the prevailing impression on his mind is, that Epsom salts means oxalic acid; and syrup of senna, laudanum. That's all, my lord.' The encouragement offered to the important educational efforts of the Pharmaceutical Society, by this measure, is very considerable, and we trust that it may have the effect of widening the influence of that society, and raising the educational standard amongst druggists."

CHEMISTRY AND PHARMACY AT THE INTERNATIONAL EXHIBITION.

BY C. W. QUIN, F.C.S.,

SUPERINTENDENT OF CLASS II. (CHEMICAL AND PHARMACEUTICAL PRODUCTS).

PASSING round to the other side of the block containing Dr. Stenhouse's collection, we come to the specimens of disintegrated graphite exhibited by Professor Brodie, of Oxford,

purified by his patent method. He mixes the graphite in powder with certain proportions of sulphuric acid and chlorate of potash in an iron pot, heating the mixture until chloric acid ceases to be evolved. He then adds a small portion of fluoride of sodium, which dissolves all traces of silica or alumina that may be present, and washes the mass copiously with water. He then heats it over a water-bath, and the graphite exfoliates in the most remarkable manner, swelling into singular shapes many times its original size. The graphite so prepared is compressed by Brockedon's method, and made into pencils. Next to Professor Brodie's case is that of Mr. Church, containing an interesting series of raw chemical products, many of them the discovery of this rising young chemist. We have only space to mention the most remarkable of them. A small specimen of solid sulphuric acid or sulphuric anhydride, as the new school term it, a large quantity of glucina enough to make half-a-dozen large emeralds, some cholestrine, cespitine, hippuric acid, naphthylamine, and several phenyl and ethylsulphites, will be regarded with interest by the scientific chemist. The block immediately opposite is occupied by Mr. Rumney's illustrations of the improvements made in dyeing and calico printing since 1851. On the counter beneath we have copious illustrations of the chemistry of the subject, in a series of bottles containing the dyes themselves and the chemical substances from which they are made. They require careful examination, as well as the wonderful series of principles obtained from madder and indigo by Dr. Schunck, contributed by the Manchester Philosophical Society. Most of these are Dr. Schunck's own discoveries, and, with Dr. Stenhouse's lichen products, complete the series of principles obtained from our three great vegetable dyes, madder, indigo, and orchil. The colours of the silken skeins surrounding Dr. Schunck's case are about the most gorgeous that have ever been seen by mortal eye. They owe their splendour to the rosaniline and chrysanthine dyes of Messrs. Simpson, Maule, and Nicholson. The specimens of dyed and printed goods in the glass cases above are very complete. Even the guano or muroxide dyes, whose fatal fugitiveness prevented their coming into general use, are represented. A series of products illustrating their manufacture may be examined on the counter below. The next block contains the magnificent show of Messrs. Perkin's mauve dye, the substances from which it is obtained, and the uses to which it is applied. On the left-hand side of the case is an immense block of mauve paste, worth over a thousand pounds, which has been produced from 2,000 tons of coal; on the other is a large jar containing one grain of the paste dissolved in two gallons of water, to show the intensely colorific property of this material. On the right side, above the block of paste, is another jar containing about two gallons of crude coal tar, the exact amount necessary to produce ten grains of mauve dye. On a long shelf at the top of the case is ranged a series of bottles illustrating the manufacture most completely. It commences with the coal tar, from which the coal tar naphtha in the next bottle is produced. Next come benzole and the nitrobenzole, which it yields on being combined with nitric acid; and further on, the aniline which is produced from it by means of acetic acid and iron. The aniline being combined with sulphuric acid gives sulphate of aniline, which, when submitted to the action of bichromate of potash, gives the black precipitate from which the dye is extracted by alcohol. The black residue remaining, which is used for printing ink, and the bye products, sulphate of potash and oxide of chromium, bring the series to a close. Beneath are arranged in the most artistic manner all the materials to which the dye has been applied, and in two glass vessels may be seen the crystallized dye in magnificent many-coloured needles. At the end of the block is the case of Messrs. Roberts, Dale, and Co., which may be taken as the model case of the class in point of workmanship and good taste. Its contents do equal credit to the well-known firm contributing it. On the top shelves are ranged a large collection of pigments used by paper-stainers, and below are the more strictly chemical products. Amongst the latter may be mentioned three fine blocks of hydrate of soda, made by Messrs. Roberts, Dale, and Co.'s patent process. Instead of using ordinary water in the boilers of their steam-engines, they use solution of soda mixed with lime. By this means they causticize their soda without the expense of fuel, gain an increase of temperature in their steam, and keep their boilers perfectly clean. The specimens of oxalic acid exhibited by them are also very fine. This substance, so much

in requisition as a discharge by calico printers, is made by them in many tons per week by roasting sawdust, potash, and soda together. By washing the mixture they obtain, in the first instance, oxalate of potash and soda, from which they throw down oxalate of lime. This they mix with hydrochloric acid, and crystallize out the oxalic acid in large crystals of great purity. They also send a mauve dye, of rather a brighter tint than that of Perkin, made by a somewhat different process. Some fine crystals of picric acid and picrate of potash complete this very excellent collection. On the other side of the block, Mr. Halliday, of Huddersfield, shows some first-rate specimens of benzole, nitrobenzole, aniline, naphthaline, and other coal tar products. Next to him is a fine collection of lichens, and the dyes produced from them, by Messrs. B. Smith and Son. The specimens of cudbear, orchil, and orchiligne are very beautiful, and the lovely colours of the silks dyed by them almost wean one from the more brilliant glories of the coal tar dyes. At the corner are some specimens of mauve and magenta lakes, which are very splendid in colour, manufactured under the patent of Mr. T. W. Smith. At the corner of the next block, Mr. F. B. Baker exhibits some large and perfect crystals of alum, sulphate of copper, and epsom salts, with some interesting data relative to the daily increase of certain of them. At the other corner is a most gorgeous show of colours by Dunell, backed up most effectively with black velvet, which tempt one to spend an hour or two over them, admiring and describing them. They are not only good in themselves, but are arranged in strict accordance with the laws of harmonious colouring. On the other side, Rea at one corner, and Wallis Brothers at the other, exhibit an excellent series of varnishes, along with the gums from which they are made. Between them come the colour cases of Blundell, Spence, and Co., and Johnson and Sons. The next block has many attractions in the way of colours, Emery's porcelain colours more especially; but we have already spent much time on these beautiful materials, and must hurry on in search of more solid matter, which we speedily find in some splendid crystals of nitrate of potash and nitrate of soda, contributed by Messrs. Richardson Brothers. The Melincrythan Company exhibit some fine crystals of acetate of lead; next to which are some splendid specimens of alum and sulphate of iron, from Messrs. Wilson, of Glasgow. The Springfield Starch Company exhibit some pretty novelties in the way of coloured and scented starches, the last case of the block being that of Mr. W. Bailey, whose porcelain colours have carried off the prize medal.

TRILLIUM PENDULUM.

SYNONYMS.—Birth-root, Beth-root, Wake Robin.

This genus is composed of pretty little herbaceous plants, possessing great elegance and beauty, and endowed with active medicinal properties. About eight species are indigenous to the Northern States of America; and of these, the species *Astro-purpureum*, considered by some to be a variety of *Trillium Erectum*, is said to be the most active. The juice of the berries of some species, mixed with alum, gives a blue colouring matter.

BOTANY.—The *Trillium Pendulum* belongs to the natural family *Trilliaceæ*—the *Trillium*, or *Paris* order; and is common in the Middle and Western States, growing in rich soils, in damp, rocky, and shady woods. It has somewhat tuberous roots, verticillate leaves, and large terminal solitary flowers, yielding a succulent fruit.

CHEMISTRY.—The roots, which are the part used in medicine, have a faint, slightly terebinthinate odour, resembling that of the Cedar; and a peculiar aromatic taste. When chewed, they excite the salivary glands, and produce a sensation of heat in the throat and fauces. They contain a bitter, extractive matter, and Tannin; but no complete analysis of their active principles appears to have been as yet made. A concentrated principle, called *Trilliin*, is prepared by Messrs. Tilden and Co., of New York, and is said to possess all the active properties of the plant.

MEDICINAL PROPERTIES.—It is stated to be tonic, astringent, alterative, expectorant, and antiseptic; and to be used most successfully as a remedy in haematuria, leucorrhœa,

cough, asthma, and difficult breathing. The Chippeway Indians believe it to be a certain specific for the bite of the rattlesnake, and likewise employ it to facilitate parturition, and as a remedy in all female complaints, especially those attended by discharges. In popular practice it has been used to assist parturition, and is believed to facilitate the birth of the child, and hence called Birth-root. Dr. Lee* says—"From all I have observed, or can gather from others, I am led to believe that the Trillium is one of the most valuable tonico-astringent alteratives, and especially beneficial in most cases of passive atonic haemorrhage, as menorrhagia, &c. The evidence in its favour, in cases of vaginal and uterine leucorrhœa, is very strong and satisfactory; also in passive bronchorrhœa and haemoptysis." He considers the concentrated preparation, Trilliin, "to be a good preparation, and coming into very general use in scientific practice as a tonic alterative."

Dr. Stone, of Greenfield, Massachusetts, is stated to have employed Birth-root extensively in all forms of bleeding, especially from the womb and lungs, with great and decided benefit; and he likewise witnessed its advantageous use in scrofula and cutaneous diseases.

The late Dr. Williams used the powdered root in doses of one drachm for an adult, repeated according to the urgency of the symptoms, in all kinds of active haemorrhages; and it is said to have been used as an external application in obstinate ulcers.

Dr. E. G. Wheeler has found the employment of the species *Atro-purpureum* to be attended by speedy and decided effects in flooding, menorrhagia, and leucorrhœa.

PREPARATIONS AND DOSES.—Messrs. Tilden and Co. give the following in their book of Formulae:—Fluid Extract, 3*j* to 5*jiij*; Trilliin, grs. iv. to grs. viij.

PERFUMERY AT THE INTERNATIONAL EXHIBITION.

The description of the wall cases will terminate our notices of the British Perfumery Department. The first of these, belonging to Mr. Robson, is a plain but handsome case, containing numerous excellencies in the way of soaps, scents, and pomades. Amongst them may be more especially noted, "The Pomade," the "Garibaldi Bouquet," and the honey and elder-flower soaps. Next to Mr. Robson's display is a soap press belonging to Mr. Cleaver, at which the process of soap stamping is continually going on, to the great delight of the International public, who always throng round any machine that makes a noise. As the press belongs to Mr. Cleaver, we need hardly say that the soap it turns out is the honey soap with which his name is identified. Mr. Breidenbach's handsome case, containing his famous wood violet scent and a number of other perfumes, has a fountain in the centre, from a classic design, consisting of a nymph sprinkling a handful of flowers. Mr. Cleaver makes a very fine show of soap; perhaps, in point of the size of the blocks, the most extensive in the class. The specimens of pink, lemon, and white soaps, surmounted by large busts of her Majesty and the Emperor of the French, have attracted great attention from the foreign visitors, who are not accustomed to see fancy soap displayed in such large masses. The case is very beautifully decorated with white and gold, a large looking-glass at the back, and some blue silken drapery adding much to the general good effect. Mr. Cleaver also exhibits a large collection of scents. Since space was granted to the exhibitors, the old-established firms of Low, Son and Co. and Benbow split into two new houses, dividing their space between them by permission of the Commissioners. Low, Son and Haydon exhibit "Jockey Club" and "Victory" scents, and a goodly show of soap in convenient circular cakes. Benbow and Sons send turtle oil soap and numerous specimens of scent, as well as several very beautifully carved ivory backed hairbrushes. The last case of the row belonging to Mr. Lewis is as splendid as white enamel, gold, and looking-glass judiciously applied can make it. It is particularly remarkable for the very tasty manner in which every bottle containing scent—and they are very numerous—is wreathed with the flowers from which the scent is extracted. In the centre is a very handsome silver fountain, which constantly plays "International

* Tilden's Journ. Mat. Med., vol. i. p. 365.

Bouquet." Mr. Lewis delights the juvenile portion of the public by distributing amongst them cracker *bonbons*, which contain little bottles of scent with an appropriate motto, instead of the usual mixture of chalk and sugar representing sugar almonds. These sweet smelling crackers grew in great profusion on the Christmas trees last year; we hope the crop that is fast approaching will be equally good. Mr. Ewen exhibits specimens illustrating the purely manufacturing side of perfumery, in the shape of purified deer, mutton and beef suets, marrow, lard, olive oil, and benzoated lard. They are ingeniously arranged so as to form the pillars of a classic fagade. The country perfumers are well represented by Messrs. Hirst, Brook and Tomlinson, who exhibit fancy soaps of excellent quality; and Mr. Vickers, who contributes many specimens of scents and glycerine and other pomades. We must not forget to mention the numerous specimens of scented soap contained in the cases of Messrs. Gibbs, who have an ingeniously arranged rotating stand; Messrs. Brecknell, Turner and Co.'s skin soap; and the beautifully labelled packets of fancy soap sent by the West of England Soap Company. Altogether the show of perfumery in the British department is most complete and excellent, and is a fitting exponent of the daily increasing taste displayed by the public for these harmless luxuries.

The French display of perfumery is characterized by the very tasteful and ingenious manner in which their perfumery is put up: an example that ought to be carefully studied by our English perfumers, who are too often apt to neglect this very important part of their business. We have only space to notice the cases of M. Piver and M. Guerlain. M. Piver, besides the numerous articles for which his house is celebrated, contributes scents prepared by Millon's process, which consists in exhausting flowers by means of sulphuric ether or bisulphide of carbon, instead of by the usual method of *enfleurage*. The odoriferous matter constituting the scent is by this means dissolved out, and on evaporating the solvent, it remains behind as a dark-coloured, waxy resin, which, when dissolved in alcohol in an infinitesimal quantity, forms the ordinary perfumed spirit. The waxy matter in any quantity has a most disgusting odour, but in minute quantities it is a perfume. M. Guerlain exhibits an ingeniously contrived perfume vaporizer, which, we hear, has commanded a great sale in Paris. We fear, however, that, as far as England goes, the ground is already too well occupied by the well-known apparatus of Rimmel. The other articles contributed by M. Guerlain fully sustain his well-established reputation. We shall conclude our notices of the Perfumery at the International Exhibition by a hasty summary of the rest of the foreign contributions, in our next number.

THE NATURAL ORDERS OF PLANTS.

POLYGONACEÆ.—THE BUCKWHEAT ORDER.

REPRESENTATIVES of this family are to be met with in almost every part of the globe, but they occur most abundantly in temperate regions. They vary very much as regards their locality, being found in fields, hedges, ditches, rivers, mountains, waste places, &c. According to Lindley, "In Europe, Africa, North America, and Asia, they occupy ditches, hedges, and waste grounds, in the form of Docks and Persicarias; the fields, mountains, and heaths, as Sorrels and trailing or twining Polygonums; in South America and the West Indies, they take the form of Coccobas or Sea-side Grapes; in the Levant, of Rhubarbs; and even in the desolate regions of the North Pole they are found in the shape of Oxyria."

The order consists principally of herbaceous plants, rarely of shrubs, and belongs to the class Exogens, sub-class Monochlamydeæ,* and comprises about thirty-four genera, and five hundred species.

BOTANY.—The leaves are alternate, with ochreate stipules (the little leafy appendages at the base of the leaf, coherent by their margins, and forming a boot-like sheath round the stem). Sometimes exstipulate (without stipules). When young, rolled backwards. The flowers are perfect, or sometimes unisexual; frequently arranged in a spiked or

* From μόνος, single or alone; and χλαμύς, a tunic; the flowers having only one envelope, viz., a calyx. Sometimes even this is wanting, when the flowers are said to be Achlamydeous.

racemose manner. The calyx is free, more or less persistent (not falling off), and imbricated in aestivation (the divisions or sepals before expansion overlapping one another like the tiles of a house). The stamens (male organs) are hypogynous (situated below the ovary or female organ, and free from it and the calyx), or rarely perigynous (more or less attached to the calyx). The anthers (the cellular cases containing the pollen, on the apex of the filament) dehisce (splitting open) longitudinally. The ovary is superior, one celled, usually formed by the adhesion of three carpels (rolled up leaves, of which the pistil is composed). The styles (that portion which connects the stigma and the ovary) and stigmas (that portion of the female organ which receives the pollen) are from two to three. The ovule solitary. The fruit is usually a triangular nut. The seed solitary and erect. The embryo inverted, usually with a farinaceous albumen, and a superior radicle.

DISTINCTION FROM OTHER ORDERS.—It may be distinguished from *Chenopodiaceæ*—the Goose-foot, or Spinach order—by its erect ovule, superior radicle, and ochreate stipules. The presence of the ochreate stipules is generally sufficient to distinguish it from all allied orders.

GENERAL PROPERTIES.—Purgative, astringent, and acid properties are the chief characteristics of this order. Some of the plants possess acrid properties, others contain colouring matter, and a few are more or less nutritious. The purgative properties, which are well exemplified in the common Rhubarb, reside principally in the roots, which are generally very nauseous; but a few are more or less nutritious. The astringent principle abounds more or less in the whole order, and is due to the presence of Tannin; in some instances, as in the Coccocloba or Sea-side Grape, it is very abundant. The acidity is due to the presence of oxalic or malic acids; in some instances, however, nitric acid is also present. The acrid properties are exhibited in the Water Pepper (*Polygonum hydropiper*); colouring principles in the Rhubarb, and some of the species of *Polygonum*; whilst the nutritious properties are well exemplified in the Buckwheat.

PRINCIPAL PLANTS AND USES.

CALLIGONUM.—The roots of the species *Pallasia*, a leafless shrub growing in the sandy steppes of Siberia, when pounded and boiled, are said to yield a gummy, nutritious substance, resembling Tragacanth; on which the Calmucks feed in times of scarcity, while they chew the acid branches and fruits to allay their thirst.

COCCOLOBA.—The fruit of the species *Americana* is remarkable on account of the succulent violet calyx which surrounds the nuts. The West Indians, in consequence, call it the "Sea-side Grape." The fruit is edible, and is said to be acid and pleasant. An extremely astringent extract is procured from the leaves, wood, and bark; and the wood also yields a red dye. The species *Uvifera* so abounds in astringent matter that it rivals Gum Kino in its effects, and is commonly known as Jamaica Kino.

FAGOPYRUM.—The fruits of the species *Esculentum*, or common Buckwheat, yield a nutritious meal, which is said to be made into thin cakes, called crumpets, in Shropshire and other parts of England. Kaempfer states that similar cakes are offered to travellers at all the inns in Japan. It is cultivated in this country for the sake of its fruits, which are employed for feeding pheasants, and of which they are very fond. It forms an excellent food for poultry also. It is stated that sheep that eat this plant become unhealthy. Both this and the species *Tataricum* are used as a substitute for corn in the northern parts of Asia and Eastern Europe.

MUHLENBECKIA.—The currant-like fruits of the species *Adpressa* are stated by Backhouse to have a sweetish taste, and to have been employed in the penal settlements of Australia for making pies and puddings.

POLYGONUM.—The fruit of the species *Aviculare*, or Birds' Knot grass, is said to be powerfully emetic and purgative; but Meisner doubts this statement. The fruit of the species *Barbatum* is said to be employed by Hindoo practitioners to ease the pain of griping in colic. A decoction of the roots of the species *Bistorta*, Great Bistort, an indigenous perennial, has been employed as an injection in gleet and leucorrhœa, as a gargle for relaxed sore throat and spongy gums, and as a lotion to ulcers attended with

excessive discharge. Internally, it has been employed, combined with gentian, in intermittents, and in passive hemorrhages and diarrhoea. The roots contain starch, and, when roasted, are eaten in Siberia. The young shoots are eaten as "herb pudding" in the North of England, and are said to be used about Manchester as a substitute for greens, under the name of "Patience Dock." It is used in Germany for tanning, and it is said that a much less quantity than what would be required of Oak bark is necessary for that purpose. The leaves of the species *Hispidum* are stated by Humboldt to be substituted for tobacco in South America.

The leaves of the species *Hydropiper*, or Water Pepper, an indigenous annual, are so acrid as to blister the skin; and the whole plant has an acrid, burning taste. It is said to be a powerful diuretic. When distilled with water, it communicates to it its acrid principle, and such water has been found very effectual in nephritic cases, when administered to the extent of two or three half-pints daily. A good yellow dye is said to be yielded by the plant, and it is stated that it will cure little aphthous ulcers in the mouth. The species *Tinctorium* is largely cultivated in France and Flanders for a blue dye which it yields, and which is said to be scarcely inferior to indigo. The roots of the species *Viviparum*, an indigenous perennial, are eaten by the Esquimaux. The Chinese are stated to obtain a blue dye from several species. Martius states that many of the Brazilian species are useful as astringents, and are employed in the treatment of syphilis. And, according to Lindley, "There is a species called Cataya, in the language of the Brazilian Indians, having a bitter, peppery taste; an infusion of the ashes of which is used to purify and condense the juice of the sugar-cane, and is employed on the Rio St. Francisco with advantage in the disease called O Largo, an enlargement of the colon, caused by debility." The generic name is derived from $\pi\alpha\lambda\upsilon\sigma$, many; and $\gamma\omega\nu$, the knee; having numerous geniculations.

RHEUM.—The stalks of this genus abound in oxalic and malic acids, they also contain some nitric acid; and it is to the presence of these that the agreeable acidity of the stalks, when cooked, is due, which causes them to be so highly esteemed in pies and puddings. The well-known medicine Rhubarb consists of the dried roots of different species, but the exact source of them is at present unknown. The species *Compactum*, Chick-leaved Rhubarb, said to be a native of Tartary and China, is cultivated in this country for the sake of its acid leaf-stalks; its roots, when dried, furnish a part of the French Rhubarb. The species *Emodi* yields a part of the Himalayan Rhubarb; its leaf-stalks are excellent in tarts and puddings. The species *Hybridum* is much cultivated in Germany for its root, and in this country for its leaf-stalks.

The species *Leucorrhizum*, according to some writers, yields Imperial or White Rhubarb; but Gobel states that "it has an insipid, slimy taste, not at all like that of Rhubarb." It is a Siberian and Altai species. The roots of the species *Moorcroftianum*, Small-stalked Rhubarb, yields part of the Himalayan Rhubarb. The species *Palatum*, Palmated Rhubarb, is commonly known to gardeners as the True Turkey Rhubarb. It grows spontaneously in the Mongolian empire, on the confines of China; and it is probable that some at least of the Turkey Rhubarb is obtained from it, and perhaps it has the best title to be considered the True Rhubarb plant. Its leaf-stalks make excellent tarts and puddings. The species *Rhaponticum*, Common or Rhapontic Rhubarb, grows in Thrace; borders of Caspian Sea; north of Caspian and Siberia. It is grown largely at Banbury, in Oxfordshire, on account of its roots, and, when dried, constitutes English Rhubarb, which is largely used in our hospitals and in those of America, but is said to be less active than the officinal kinds. It is also cultivated in France, and yields part of the French Rhubarb. Its leaf-stalks are used in this country for tarts and puddings, and it is frequently termed Culinary or Tart Rhubarb. The species *Ribes*, or Warted-leaved Rhubarb, called Riwasch or Ribas in the East, furnishes the Arabs with an acidulous medicine, and sherbet is made from its leaf-stalks. It is an Afghanistan and Persian species. The species *Undulatum*, or Wave-leaved Rhubarb, grows in Siberia and China. It is cultivated in France, and is the source of part of the French Rhubarb. The species *Webbianum* yields some of the Himalayan Rhubarb.

RUMEX.—A short notice of the species *Acetosa* will be found in our Botanical Calendar

for July.* The species *Acetosella*, *Patientia*, and *Scutatus*, possess properties similar to those of the species *Acetosa*, and have been employed for potherbs and salads. The roots of the species *Alpinus* are purgative, and were formerly employed instead of Rhubarb, under the name of "Monk's Rhubarb;" it is, however, much less active. The root of the species *Crispus*, or Curled Dock, an indigenous perennial, has been used, in the fresh state, in the form of an ointment or decoction, to cure the itch; and the seeds are said to be given with advantage in dysentery. In America, where it has become naturalized, it is regarded as alterative, tonic, mildly astringent, and detergent; and it is said to prove useful in scorbutic and syphilitic affections, leprosy, elephantiasis, &c. The species *Hydrolypatum*, or Great Water Dock, was formerly regarded as a medicine of considerable efficacy, and was employed, in the form of a decoction of the root, as an astringent gargle for putrid, spongy gums; and, internally, in some species of scurvy. It is reported to have proved very useful in rheumatic pains, and chronic diseases from obstructed viscera. The powdered root forms an excellent dentifrice.

TRIPLARIS.—Lindley states that "the trunk and branches of the species *Americana* are chambered like those of the Cecropia or Trumpet-tree, and serve for the habitation of light brownish ants, which inflict a most painful bite."

SMALL-POX AMONG SHEEP.

The following letter, especially interesting at the present moment, we extract from our contemporary the *Lancet* :—

"I have just returned from Wiltshire, whither I accompanied my friend, Professor Simonds, in order to study minutely, and from a medical point of view, the serious epidemic of small-pox, which has recently appeared among sheep. As I believe no other medical practitioner has as yet devoted especial attention to the subject, or made any professional report concerning it, I send you a brief record of what I observed, thinking it may be interesting to the profession, and tend to allay the alarm which just now naturally exists as to the extension of the disease to other flocks hitherto unaffected.

"The disease first appeared in Mr. Parry's flock, when it was feeding on the banks of the canal which runs through the Vale of Pusey, situated between Salisbury Plain on the one side, and the Beckhampton Downs on the other, three miles from Devizes. The soil is an alluvial loam. The flock was composed of ewes and lambs, and numbered about 1,700. It is positively stated that no additions had been made to the flock for a long time previous to the outbreak of the complaint at the period to which I refer. It may be worth noticing that this district was perfectly free from the ovine epidemic in 1848 and 1849; the nearest flock where known to be affected was one in Hampshire.

"At the time of my visit, on the 4th ult., three infected flocks were under the sole supervision of Professor Simonds—viz., those of Mr. Parry, Mr. Harding, and Mr. Neate. It is rumoured that small-pox has appeared in four other neighbouring flocks.

Probable Mode of Infection.—The account of the outbreak in Mr. Harding's flock was given me in the following words by that gentleman:—When Mr. Harding first noticed incipient disease, his sheep were feeding only a few fields away from the flock previously infected on Mr. Parry's property. He is quite certain that his flock had no direct communication with that of his neighbour. It is probable that the infection, aided by the heavy dews in this valley, was so conveyed from one flock to the other; for experiments (formerly made) have shown that small-pox in sheep is a highly infectious complaint. Our old friend, the starling, has been accused of communicating this disease when he perches on the sheep's back to eat the ticks he finds there, and it is just possible that his beak may sometimes be the medium of conveying the poison; but, as will be presently seen, the parts affected in diseased sheep are not such as the starling's beak would be likely to come in contact with. Flies have also been supposed to be agents of inoculation, and so they are, doubtless, in the advanced stages.

"Mr. Harding's flock—consisting as it does of Wiltshire downs—was, at the time of my visit, folded into separate lots of from 40 to 70. The sheep were feeding on the best artificial grasses and turnips, a fresh portion being given them daily. Previously to being affected, the animals were in excellent condition, living on a good soil, and worth, say, forty shillings a piece.

"The Symptoms.—On entering the fold, the following symptoms presented themselves:—The most sickly of the infected sheep had separated themselves from the others. They wore a marked dejected expression: the head held low; the ears pendent; the breathing quick and short; the eyelids swollen, and tears trickling down the face; the conjunctive varied in tint, from a bright scarlet to a Modena red; a mucous discharge flowed from the nostrils, which increased in viscosity as the disease advanced, often becoming sanguineous in the latter stages; rumination was suspended and all food refused, but the poor creatures evinced a strong disposition to drink, and also to lick earth. This soil, mingling with the mucus of the nose, rapidly clogged the nostrils, and rendered the respiration more difficult. By placing an animal on its back, the chief seat of the eruption was exposed to view—namely, the inside of the arms and thighs. It consisted of a papular affection—in some cases confluent, in others distinct. These papules or elevations were hard, in some cases blanched, in others sphacelated—running into pustules—the cuticle covering them assuming a brown colour. Large unhealthy sores existed in many places. The similarity between these symptoms and those observed in advanced cases of small-pox and typhus in the human being struck me forcibly; but it seemed that the difficulty these poor animals had in swallowing, and the objection to giving them drenches, rendered their cases hopeless. I put the question to the Professor, 'Why not kill the suffering creatures, and thus end their misery?' His reply was, 'The shepherd has not the heart to do it.' Professor Simonds pointed out that the 'groggy' sheep which could hardly stand—the mere skeleton of its former self—was not necessarily condemned; on the contrary, it was convalescent. The favourable prognosis was further shown by the facility with which the scabs covering the pustules could be removed, leaving a dry surface underneath; this was confirmed when the animal was put on its legs, as it began eating its vetches or taking its gruel in the troughs.

"Prophylactic Measures.—It may be satisfactory to the public to know that every possible sanitary precaution is being taken (under the direction of Professor Simonds) by the wealthy farmers already mentioned, to prevent the spread of the disease. As soon as the animal dies, it is buried *in its skin*, in a hole four feet deep. Strangers are forbidden to come near the flocks, so as to prevent extension of the disease. The shepherd's dogs are shut up at home. As soon as flocks are discovered to be infected, the healthy as well as the diseased sheep are inoculated. Professor Simonds does not advocate the inoculation of flocks previous to disease having appeared in them. The columns of the *Times* have already shown how one of these gentlemen has repurchased a portion of his flock which he sold before he became aware* that the sheep composing it were infected. It is in these various ways they hope to keep the malady within narrow bounds. I did not find that any steps had been taken to prevent the holding the annual neighbouring fairs. But so secluded is the valley in which this outbreak has taken place, that few sheep will pass it on their way to the fairs, although some may come near the infected spot on their return. It is hoped that the extensive dissemination of these facts in the *Times* may, to some extent, mitigate public alarm. I may further mention that in former epidemics of small-pox the disease was, I believe, confined to the neighbourhoods where it first broke out.

"Inoculation.—In Professor Simonds' valuable work on *Variola Ovina* (Churchill), it is clearly shown that vaccination by no means protects the sheep from the future invasion of small-pox. It is in vain, then, to attempt the introduction of vaccine virus into flocks

* It would be an interesting inquiry to decide what has been the effect of these sheep (lambs) mixing, even for a short time, and before the disease manifested itself in them, with other and distant sheep, as I believe was the case. Some of your readers in Wiltshire might possibly be able to supply the information.—W. A.

threatened with this disease. The only protection, and this a partial one, which experience in Austria, Belgium, and Great Britain has shown can be depended upon, is inoculation.

"It is, however, quite in accordance with what experience has taught us of other animal poisons to find, as we do, that in no instance has this ovine complaint been communicated to the cow, goat, dog, or human being, although various experiments have been instituted most carefully to test the fact.

"The operation is a very simple one. It is performed in the following way:—The place usually selected for the operation is the inside of the thigh. The instrument which Professor Simonds employs is a curved needle, made for the purpose, with a fine and somewhat flattened point, which, having been previously dipped in the virus of a vesicle, is carefully inserted between the upper and second skin, cautiously avoiding piercing so deeply as to draw blood, which would render the success of inoculation doubtful. Great judgment is required in the selection of the fittest vesicle from which the virus should be taken. I had abundant evidence furnished me, showing that inoculation may be performed on a large scale, without a single unfavourable result, if proper precautions be taken.

"On Thursday, September 4th, I went to see Mr. Neate's lambs. They had been inoculated ten days previous to my visit. They were feeding in a meadow, on very good after-grass, and a healthier looking lot I had seldom seen. There were a few lying down apart from the others, as if somewhat sick and ailing; but this was an exception. Mr. Simonds desired the shepherd first to catch those that were the most sickly. On closely examining a large number, I noticed the following appearances, which were common to the flock:—On the inside of the thigh there was a raised, flattish, rosy tubercle of the size of a shilling; the margin appeared raised by little vesicles. In some instances the neighbouring absorbents were enlarged and hardened, and the skin was hot; but the animals did not seem to suffer from much fever, and, as I said above, were feeding like the other healthy lambs. This is the condition that we expect when inoculation has been successfully performed. In all such cases the disease takes on this benignant form, and the animal becomes no longer susceptible of taking the *natural complaint*, or becomes subsequently affected in the way those sheep were which I first described. In some few instances (together with the above appearances) a papular eruption, such as we should call *roseola*, was noticed on the skin of these animals. Such papulae were not confluent, and I believe I am correct in stating occurred in lambs that had already probably been infected previous to inoculation, and would (had not inoculation been performed) have suffered most severely from the *natural complaint*.

"When I left, Professor Simonds was about to examine every lamb, and should he find that inoculation had not succeeded, such animal would be again reinoculated. The numbers requiring such reinoculation are said to be few. As far as my observations went—and I carefully examined a great many of these inoculated sheep—no ill consequences were likely to arise from inoculation; and I believe it is one of those operations that in scientific hands, and with proper care, may be performed with the best probable results. I should say, as far as I could judge in my short visit to Wiltshire, that we possess in inoculation a valuable means of modifying the effects of a most loathsome and fatal disease.

"WILLIAM ACTON.

"Queen Anne-street, Cavendish-square, September, 1862."

CARDAMOMS.*

How many English people know anything of cardamoms? Among the tens of thousands of daily visitors to the universal repository of products and fabrications at South Kensington, are there a hundred, or even a score, who could go straightway to the case, or even to the court, in which the article cardamom is exhibited? Tell us, well-instructed reader, replete with the contents of the official catalogues,—tell us, off-hand, what it is? or tell us, in three guesses, whether it is a sea-shell, a dried fish, or a conjuring toy—something

* *Chemical News.*

to eat, or drink, or wear—a vegetable, mineral, or animal substance? When you have excogitated a wholesome conclusion of ignorance, go into the Indian collection at the top of the north-east staircase. There you will find, among the vegetable substances from which drinks are concocted, two or three bottles labelled with the name of the article you seek, and you may construct your own natural history of the brown, husky beans, something like rough, overgrown almonds, that are there set forth as the growth of Travancore, and other districts of India. Perhaps in the chemical department you may find also a bottle labelled "Tincture of Cardamom;" and in that deep red fluid you will see the stomachic for the sake of which cardamoms are cultivated, farmed, and taxed.

Yes, farmed and taxed. The commodity of which Englishmen know so very little, is an article of revenue to their Indian Government, and the collection of that revenue matter of bargain between the Government and a contractor or farmer. The affair is managed in this wise:—Once in five years the collector of Calicut puts up to auction the cardamom farm of the district of Wynnaad. The district includes seven talooks on the sides of those lesser ghauts that terminate in Malabar, the western mountain chain of the peninsula. Wynnaad, the chief of these talooks, giving its name to the whole, is especially favoured by nature in the matter of cardamoms. A rugged and inaccessible region—suspended, as it were, between Mysore and Malabar, and long a debatable as well as border land—it would have no commercial value but for its remarkable aptitude for the production of this pungent spice. The native rajahs gave the Company some trouble in the days of the Mysore chieftains, and the Company avenged itself by taking possession of the soil and the crops for ever. The purchaser of the cardamom farm of Wynnaad acquires at once an exclusive right of taking the whole crop of cardamoms at a fixed price. The grower must gather the crop, dry and clean it, take it to a place agreed upon, and there deliver it up at the price fixed for him by the Government, usually about a fourth of the market price. The contractor may use his own weights, and pay in his own coins, leaving the poor peasant-cultivator to get redress, if he can, for errors and frauds. To conceal or secretly sell any of the pods is an offence against the revenue laws, and an injury to the contractor, for the prevention of which armed men watch the collection of the crop, and search houses in which any of it may be supposed to be hidden. Of course the grower is a smuggler, and equally, of course, the contractor is a cheat and an oppressor. A transaction with the Government—the Government of Queen Victoria—has handed over the chief produce of the soil of Wynnaad, the chief property of its mountainous inhabitants, to a stranger. He has bought the right to rob them with impunity, taking, without their leave, every grain of their principal crop, paying them for it a third or fourth of what it would fetch at the nearest town, and punishing them if they attempt to withhold but a single bag of their own produce. And, after having made a profit of thousands of rupees out of the rapacity of the contractor, and the helplessness of the grower, the Government stops the export of the crop until it has paid toll for the privilege of going out of the country.

ON ALBUMINATE OF IRON AND SODA AS A THERAPEUTIC AGENT.

BY ANGELICO FABRI.

SIMPLE contact, at the ordinary temperature of the atmosphere, of white of egg with a salt of iron and soda, is capable of instantly producing a soluble albuminate of iron and soda, or an albuminferrate of the alkaline base. The chemical combination of this compound is such that it is not altered by the yellow ferrocyanide of potassium, the most delicate test of the salts of iron, unless a few drops of acid—as, for example, hydrochloric—be previously added to the soluble albuminate, thus proving that this decomposition cannot be effected by the agency of the alkalies, but only by some acids, since the potassium of the cyanide is not able to displace the oxide of iron, becoming oxidized at its expense, and setting the metal free, as occurs with the other ferruginous preparations. Considering that we find in the blood albumen, soda in excess, and iron, and having

shown how these three bodies, by simple direct contact, form a soluble salt, the chemical combination of which is so powerful that it is not destroyed by the most delicate reagent, may we not fairly infer that the iron exists in the blood as an albuminate of iron and soda?—and would it not, therefore, be reasonable to administer iron in the various diseases in which it is prescribed, principally in reference to the state of the sanguineous system, in the form of albuminate, as that in which nature itself has placed it within our organism—one of the products, so to speak, on which our life depends? When I read in works of chemistry that the yellow ferrocyanide of potassium is not capable of demonstrating the presence of iron in the blood until a stream of chlorine has first been passed through the latter to destroy its colouring matter, I am confirmed in the opinion that the iron exists in that fluid as an albuminate of iron and soda, because this salt, requiring the addition of an acid to render it capable of detection by the cyanide, is supplied with it by the chlorine, which, in destroying the organic colouring matter, becomes converted into hydrochloric acid by uniting with their hydrogen. Physicians have been long puzzled, and are still at a loss, how to administer iron, a valuable remedy, in the manner most suitable to the internal organism; hence the great number of preparations of this metal. Some object to its saline combination with mineral acids on the ground that these are inorganic, and they prefer giving it in the metallic or oxidized state, leaving the acids of the stomach to form with it compounds which may be carried into the circulation. Others, unwilling to run the risk of having the greater part of the iron—little or not at all acted upon—expelled with the faeces, prescribe it in the saline state, but combined with organic vegetable acids; hence we have the malate, tannate, citrate, &c., of iron. Others, still more scrupulous, wish to have it united to acids of an animal nature, and prefer the lactate, the cyanide, &c.; and I, going still further, would recommend its employment in the state of albuminate of iron and soda, requesting physicians to take into consideration what I have advanced, and to ascertain if practice will in this instance corroborate theory.

In preparing the albuminate of iron and soda I employed the following process:—Take 112 grains of caustic soda, and 104 of sulphate of iron. Having dissolved both in a sufficient quantity of distilled water, let the solutions be poured on the whites of four eggs previously beaten up; let all now be shaken together and poured upon a filter to separate the hydrated oxide of iron which has precipitated, since all the iron is not in this case converted into albuminate. To the filtered liquid, which now contains, in addition to the albuminate, sulphate of soda, formed by the decomposition of sulphate of iron by the soda present in excess, lime water is to be added to decompose the sulphate of soda, by which an insoluble sulphate of lime is precipitated. To separate the latter, the mixture is to be again filtered; and as the filtered fluid will contain an excess of lime, it is to be subjected to the action of a stream of carbonic acid, care being taken to avoid using an excess of the latter, and again filter to get rid of the insoluble carbonate of lime thus formed. The filtered fluid is now to be allowed to evaporate in a wide, shallow vessel, and with the aid of the heat of a stove, until it is reduced to a pint. A clear orange-yellow, slightly saltish, chalybeate solution is thus obtained, which, as already mentioned, does not give a precipitate with ferrocyanide of potassium without the addition of an acid. Each ounce of this liquid contains, approximately, four grains of the albuminate, *plus* an excess of albumen and soda, as may be seen by referring to the process employed; the solution, consequently, has a slightly alkaline reaction. It is desirable that the soda should thus be present in excess, in order that the compound shall be conformable to the state in which it exists in the blood, where we find the albumen rendered alkaline by an excess of soda.—*Journal of Rational Medicine.*

EATING BELLADONNA BERRIES.—At the University Botanic Gardens at Cambridge, on Saturday, 6th inst., some children gained admittance to the Physic Garden, having eluded the superintendence of their friends, and ate some of the berries of the *Atropa Belladonna*. Violent symptoms soon presented themselves, but happily the children recovered.

HYDRAULIC ILLUSIONS.*

By W. B. TEGETMEIER.

THOSE visitors to the metropolis who accept Dr. Johnson's invitation, and take a walk down Fleet-street, may have noticed the small crowd of wondering gazers usually assembled around a shop window a few doors west of Temple Bar. The object of attraction being, not the exterior of the earthenware filters vended by the occupant, but a series of hydraulic contrivances and designs, the most attractive of which is a perpendicular glass tube, some six feet in length, up which is seen passing, in endless and regular succession, a series of bubbles of air, as unsubstantial and as interminable as the line of shadowy kings that passed before Macbeth.

The mechanism by which this exceedingly effective and pretty contrivance is produced is entirely concealed; and as the occupant of the warehouse astutely declines to afford any information on the subject, the matter has remained for several years one of the unsolved enigmas of the town.

That the means adopted to produce the result are not generally known, is evident from the fact, that the design has not been imitated, which, from its attractive character, would have been the case had the means by which it is effected been understood.

Scientific knowledge is not, however, the exclusive property of any one individual; and as Mr. Lipscomb has had, for a very long period, the benefit of this attractive advertisement, we have no hesitation in laying bare the concealed mystery, at the same time giving him every credit for the knowledge displayed and the ingenuity manifested in the contrivance.

The ascent of these bubbles is obviously produced by means of an apparatus known to chemists under the name of an aspirator, from its being employed to draw a current of air or gas through any tubes or vessels along which it may be required to flow.

If our readers will look at the apparatus in the Strand, they may observe that the glass tube up which these bubbles ascend, in apparently such a mysterious manner, is perfectly free and unattached below; this want of communication with any other portion of the apparatus rendering the action less easily comprehended. If, however, they look to the upper part of the glass tube, they will find that it is enclosed in a metal tube, and that from this a smaller tube ascends to and passes along the ceiling of the shop. No other portion of apparatus is visible, and it is the extreme simplicity of the arrangement, and the apparent want of any adequate cause, that renders the whole so incomprehensible and attractive.

If we wish to understand how the effect is produced, we must imagine that the small tube, after passing along the ceiling to a convenient locality, is made to descend and enter into a perfectly air-tight cistern. This is furnished with an aperture, for the purpose of filling it when required. The aperture is capable of being closed by a screw with a leather washer, that enables the opening to be shut in a perfectly air-tight manner. From the cistern descends a long tube, having a stopcock at its lower extremity. No particular proportions are requisite except one, which is absolutely indispensable, that is, that the length of the column of water in the cistern and the long tube descending from it should be greater than that in the glass tube; and should this latter be filled with syrup, or any liquid heavier than water, the difference must be proportionately greater.

Having described the apparatus, let us now explain its action. We will suppose the glass tube, which is alone presented to the gaze of the public, to be filled with liquid. Water would answer, but as the object is to cause a slow ascent of the globes of air, a thicker liquid, such as clear syrup, would be preferable. Whatever may be the liquid employed, it is prevented flowing out of the small aperture in the bottom of the tube by a valve opening upwards. This valve is contained in, and concealed by, the small metal cap placed on the lower end of the glass tube.

The cistern is filled with water through the aperture, which is then closed. On opening the small stopcock at the bottom of the long tube descending from the cistern, the water will flow out, owing to the greater pressure in the longer tube than in the shorter glass

tube, up which the bubbles ascend. In order to supply the vacancy created in the cistern, the external air will enter by the opening at the bottom of the glass tube, and ascend in a regular series of bubbles through the liquid it contains. This action will continue as long as any water remains in the cistern, and may be renewed by replenishing it from time to time, as may be requisite or desirable.

Such is the simple apparatus that has puzzled the wits of some thousands of spectators during a period of several years, and has tended to give greater notoriety and reputation to the warehouse in which it is placed than many more elaborate contrivances would have done.

The aspirator, as the contrivance is termed on which the action of this deception depends, has long been known to operative chemists, who not unfrequently desire to draw a current of air or gas through a tube.

ON THE ALKALOID CONTAINED IN VERATRUM VIRIDE.*

By S. W. ABBOTT, M.D., WOBURN.

THE properties of veratum viride have led many to suppose that it owed its power to some active principle, perhaps veratria, an alkaloid which has hitherto been obtained from the seeds of a Mexican plant of the same natural order.

On hearing the statement made during the present winter, in the lectures on arterial sedatives, that the active principle of this plant had not yet been determined, I was somewhat curious to investigate the subject and ascertain, if possible, whether its active principle were really veratria, or if it bore any similarity to it.

In making the trial, I made use of the mode given in the *Edinburgh Pharmacopœia*, preferring it to that of the *U. S. Pharmacopœia*, on account of its greater simplicity. The process is as follows, with the exception that in place of tincture of cevadilla seeds, the tincture of veratrum viride root was substituted:—Four ounces of the tincture were concentrated by slow evaporation over a water-bath, until a deposit began to be formed. The residuum was poured, while hot, into twelve times its bulk of cold distilled water. This was filtered through calico, and the residuum on the filter washed, so long as the washings precipitated with liquor ammonia. The filtered liquid and the washings were united, and an excess of ammonia added. The precipitate was collected by filtration, washed with cold water, and dried by means of imbibition and the vapour bath. A slight additional amount was also obtained by evaporating and cooling the remaining ammoniacal liquid.

The result obtained by this process was a brownish powder, in amount about two and a half grains. The same process was tried with four ounces of the tincture of the seeds already mentioned, and a similar powder was obtained, somewhat lighter in colour, and in amount about three-quarters of a grain.

The alkaloid thus obtained is soluble in strong alcohol, but insoluble in water. The following reactions were obtained by chemical tests:—A dark orange-red colour on adding a drop of sulphuric acid; a portion dissolved in dilute acetic acid gave a white precipitate with liquor ammonia. These reactions are also characteristic of veratria, a quantity of which I had procured, in order to compare the two together.

Under the microscope, with a power of 300 diameters, the following appearances were noticed:—Having dissolved a small portion of each in water acidulated with acetic acid, a few drops of sulphuric acid were added. This solution was partially evaporated at a gentle heat, and a drop of each placed on a slip of glass. The microscope revealed a multitude of beautiful acicular crystals. The crystals obtained from these two solutions are very similar, though more slender and beautiful in that obtained from the officinal veratria than that from the nameless product in question. A similar result was obtained by the action of hydrochloric acid, except that the crystals were in both cases shorter and thicker, and some of them disposed to assume the shape of hexagonal prisms.

* See page 157, *Chemist and Druggist*.

After trying the above reactions, hardly a homœopathic portion of the original amount remained with which to test its physical properties, but there was a sufficient amount to induce considerable sneezing, and also an acrid bitter taste when taken into the mouth. The remainder, thoroughly mixed in lard, produced a slight redness of the skin when rubbed upon the surface.

These facts, when taken together, would seem to prove that these two alkaloids, if not identical, are yet very similar in their natures.—*Chemical News.*

SCIENTIFIC INTELLIGENCE.

Preservation of Building Stone.—The discoveries of Mr. Graham, respecting the process of dialysis, have been recently described in the *Chemist and Druggist*.—Although but comparatively a short time has elapsed since their publication, several practical applications of them have already been made. One of the most important of these is Mr. A. Church's proposal for preventing the decay of building stones by atmospheric influence.

In this process, the stone is firstly impregnated with a solution of pure baryta, and is then acted on by a solution of silica, which is obtained by decomposing silicate of potash, or soda, with hydrochloric acid, and then dialysing, so as to get rid of chloride of potassium, or sodium.

The limestone, or dolomite, to be preserved, is first brushed over with the solution of baryta, until it ceases to be absorbed, and, a few hours after, with the solution of silica. The result of the mutual reaction of these two solutions is, that a perfectly insoluble silicate of baryta is formed in the substance of the stone, which resists all atmospheric and hygrometric influences. The pre-eminent advantage of this plan is, that no soluble or destructive materials are introduced into the stone to be preserved; this is a point of very great importance, for when any soluble salt, particularly one which is either deliquescent or efflorescent, is produced in the texture of the stone, along with the materials that are intended to have a preservative influence, the former are either dissolved out by atmospheric moisture, or crystallize on the surface in an efflorescent form, and in this manner tend to accelerate the very evil they were designed to prevent.

Tar Plasma.—Henry B. Brady gives the following information respecting the so-called Glycerole of Tar, or Tar Plasma:*

"A combination of glycerine and tar has been used recently in skin affections instead of the tar ointment of the Pharmacopœia. The advantages seem to be that the glycerine compound is more readily absorbed, and less difficult to remove by washing. I have not been able to find formula for the preparation in question, neither can I learn that any published one exists, and would therefore propose the following, as yielding an unexceptionable product. The strength is the same as that of the Unguentum Picis Liquidum, P.L. Price's Glycerine, six oz. weight; Tar, six oz. weight; Powdered Starch, two drachms. Warm the glycerine, stir in the starch, add the tar, and raise the mixture rapidly to the boiling point. Strain through a cloth, if necessary, and stir whilst cooling. The mere mixture of glycerine and tar heated in a water-bath, gives on cooling a spongy mass, the pores of which are filled with glycerine; after standing some time, complete separation takes place. Tragacanth, acacia, soft soap, and many other things have been tried as substitutes for the starch, but none of them with so good result. Made according to the above formula, Glycerole of Tar is a dark brown mass, perfectly smooth, in consistence somewhat softer than the ointment."

Albertite.—Under this name, a beautiful, most lustrous, and intensely black substance, is exhibited in the New Brunswick Court, at the International Exhibition. A clever writer in the *Intellectual Observer* gives the following interesting account of it:—

"Albertite presents the general appearance of a very excellent cannel-coal, and breaks with an extremely brilliant conchoidal, vitreous fracture. Its jet black powder, when

heated in an open vessel, melts, and then gives off great quantities of combustible vapours, leaving a light and bulky coke. But there is one point to be observed here of great interest—this coke is pure carbon, there being, in fact, practically speaking, *no ash* in Albertite, as following result proves:—

1·55 grammes of Albertite left ·001 or 1 milligramme of ash.

This is equal to no more than ·0645 per cent., while we believe that no cannel-coal or anthracite hitherto analyzed contains so little as 1·0 per cent. Among its volatile constituents Albertite contains mere traces of sulphur and nitrogen.

“Together with the Albertite itself, specimens of oil produced by its destructive distillation in close vessels are also exhibited. They are admirably adapted for burning in paraffin lamps, affording a good light, having little or no disagreeable odour, and not forming, under any circumstances, an explosive vapour. In fact, a sample of the oil, when submitted to fractional distillation, did not commence to boil until the thermometer had risen to 338° Fahr., or 126° above the boiling point of water; while only half the oil had come over at 482° Fahr., one-seventh remaining in the retort when it had been raised to the boiling point of mercury.

“The discovery of large sources of native mineral oil has caused the manufacture of Albertite oil to be discontinued. This is a circumstance to be regretted, as we are convinced that it far surpasses, in its illuminating power, freedom from smell, and perfect safety in use, any hydrocarbon oil that has come under our notice.

“We may mention, that the analysis of these two singular minerals has been made by Mr. A. Church, who is continuing the investigation of their composition and general properties.”

A New Fluorescent Solution.—According to Simmler,* a highly fluorescent solution may be prepared from cane-sugar, as follows:—To a syrupy solution of cane-sugar, an equal volume of sulphuric acid is gradually added. The mixture blackens, a violent reaction is set up, which results in the formation of a solid mass, resembling black peat. When this is somewhat cool, the mass is shaken with about ten times its volume of distilled water, and allowed to stand. After filtration, a liquor is obtained, which, in transmitted light, is quite colourless, except when strongly concentrated; but viewed in daylight against a black cloth, exhibits a more brilliant blue even than quinine. It appears to be due to a peculiar organic acid, for, when neutralized with a base, the fluorescence disappears.

Value of Condimental Cattle Foods.—Mr. Lawes, of Tothampstead, has recently published the results of a very laborious and extended series of experiments to determine the value of the prepared cattle foods. Twenty sheep, as nearly as possible equal in weight, age, and character, were divided into four pens, of five in each. Those in the first pen were fed with linseed cake, clover chaff, and Swedish turnips, the supply of the last being unlimited. In pen two, a fourth of the linseed cake was removed, its place being supplied by Thorley's food.

Pens three and four were fed in the same manner, except that cotton cake was used instead of linseed.

The sheep were fattened for twenty-eight weeks, the entire food being weighed, and the increase of the animals being noted from time to time; the results were in every way opposed to the pretensions of the condimental food.

The first cost of feeding with it was much greater; the price of Thorley's food being £40 per ton, as compared with linseed cake at £11, or cotton cake at £8 per ton.

The sheep fed with it did not attain the same weight as those that did not obtain it, and it required considerably more food to yield a given amount of increase in live weight with the condimental food than without it.

In round numbers, the loss in fattening sheep with the aid of Thorley's food may be stated as 7s. per head, when it is substituted for linseed cake, and 8s. per head when it is used instead of cotton cake.

These experiments, taken in conjunction with those previously published, with regard

* *Phil. Mag.*, from *Chem. Central-Blatt.*

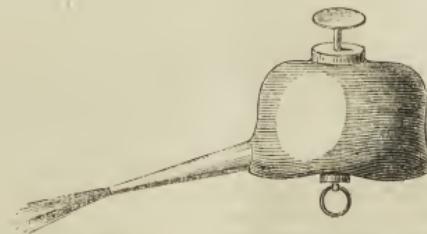
to the fattening of pigs, conclusively prove that the so-called condimental cattle diets do not increase the assimilation of food by fattening animals; and that their employment is attended with a serious pecuniary loss to the feeder, who purchases at the rate of £40 per ton an article that can be manufactured for about one-fourth of the price.

Preparation of Alcohol from Coal Gas.—The following article is extracted from the columns of the *Chemical News*:—The daily and weekly press, whose scientific paragraphs, at this season of the year, are more calculated to astonish than instruct the public, have lately contained announcements of a discovery to the above effect, at St. Quentin, by a young chemist named Cotelle. The paragraph goes on to state that a joint-stock company, with a capital of 400,000 francs, has been formed to carry out the patent. The inventor announces that he can sell his alcohol at twenty-five francs the hectolitre, whilst the most inferior spirit produced from other articles is selling for seventy-five francs the hectolitre. This, like many other chemical patents, is utterly impracticable on the large scale. M. Cotelle has read that M. Berthelot, some years ago, succeeded in transforming olefiant gas into alcohol by the intervention of sulphuric acid and has jumped to the conclusion that as coal gas contains a considerable quantity of olefiant gas, he has only to shake it up with sulphuric acid to produce as much alcohol as he likes. We have seen M. Cotelle's patent; in it he claims to produce alcohol of good flavour by means of purified lighting gas passing over (*traversent*) liquid sulphuric acid, or by bringing it in contact with the acid in vapour (*avec l'acide en vapeur*). Our readers who know the long and tedious operation by which even a minute trace of alcohol can be produced in this way, will not envy the shareholders who have subscribed with such wonderful rapidity.



VICAT'S INSECTICIDE APPARATUS.

We have before had occasion to describe the origin and natural history of the exceedingly effective insect destroying powder, produced by the *Pyrethrum roseum caucasicum*, and have much pleasure now in directing attention to Vicat's very ingenious blower, by



which it can, with great certainty, be projected into the most minute crevices and apertures in which insects harbour. The principle of this blower is shown in the engraving.

The metallic vessel containing the powder is furnished internally with a piston, which is moved by means of the button. On pressing this button down, the air in the interior is forced out, carrying with it a stream of powder, in a manner so forcible that it penetrates into the smallest fissures—this action can be rapidly and conveniently repeated at will.

In the lower part of the instrument is a stopper, furnished with a ring; the stopper closes the opening through which the case is filled, and the ring affords a convenient handle for holding the instrument, and gives facility for directing the spout to the exact spot required.

As we are fully aware, from experience, of the value of the powder, we hail with pleasure any mechanical apparatus which makes its application easy and effective.



Claims for Exemption from Serving on Juries.—The Juries Act, by which Pharmaceutical Chemists are exempted from serving on juries, came into operation on the 10th of August; and it appears that at that time arrangements had been made for the preparation of the Jury Lists for the present year without reference to the new class of exemptions. Pharmaceutical Chemists, however, can still claim exemption; but to enable them to do so with effect, it will be necessary for them to be provided with certificates of registration. These are furnished by the Registrar and Secretary of the Society, on application being made to him, accompanied with a stamped envelope and twelve postage stamps.

The following letter from the solicitors will show that immediate steps were taken to inform the Clerks of the Peace, but that the information was not in time to be acted upon this year:—

“9, Mincing Lane, London, 13th August, 1862.

“To the President and Council of the Pharmaceutical Society of Great Britain.

“In order to secure to Pharmaceutical Chemists the benefit of the exemption from service on juries recently enacted by 25 & 26 Vict. c. 107, we have communicated with the Clerks of the Peace of counties, and have ascertained that it is too late for them in the present year to convey to the churchwardens and overseers of parishes information respecting the exemption; it therefore remains for the Society, through its ordinary channels, to convey to Pharmaceutical Chemists the information that they are entitled to claim exemption, and that they must individually make claim to exemption before the jury lists for the year are finally settled. By the Pharmacy Act (15 & 16 Vict. c. 56) your Registrar is bound to issue to every applicant (for a fee of one shilling) a certificate stating whether the person named and described is, or is not, a Pharmaceutical Chemist; and such certificate is made evidence. We recommend that each Pharmaceutical Chemist shall have such a certificate, and produce it on all occasions when he claims exemption.

“We are, Gentleman, yours obediently,

“FLUX AND ARGLES.”

The New Pharmacopœia.—In consequence of some difficulties having arisen with respect to the publication of the new Pharmacopœia, a bill has been brought in by the Lord President, providing, in the first place, that the General Council of Medical Education and Registration shall be deemed to be, and to have been, from the date of its first establishment, a corporate body, with capacity to hold lands for the purposes of the Medical Act; and in the second place, it directs that the British Pharmacopœia, when published, shall for all purposes be substituted for the existing Pharmacopœias, and that any Act of Parliament, Order in Council, or custom relating to any of these, shall be deemed, after the publication of the British Pharmacopœia, to refer to it.

Pharmaceutical Evening Classes.—We are glad to hear that Mr. J. C. Braithwaite, who for so many years was principal instructor in the laboratories of the Pharmaceutical Society of Great Britain, has recently fitted up a laboratory, for instruction in Practical Chemistry, and have little doubt he will meet with numerous patrons.

Methylated Spirit.—A series of letters in the *Pharmaceutical Journal* make us acquainted with the rather startling fact that cleaned methylated spirit is not only used as a vehicle for tinctures, but is actually sold in enormous quantities by country hucksters as a dram-drinker's beverage. A little Sp. eth. nit. is added to the spirit, which is coloured with cochineal or burnt sugar, and the mixture is sold as “Indian brandee,” and bearing a label stating its efficacy in cases of colic, spasms, coughs, and colds. We believe that it is principally in the north that the stomachs of her Majesty's lieges are ruined, and the revenue defrauded, by these abominable practices, and we should be glad to receive certain information on the subject from any of our northern correspondents.

Chemical Trophy, International Exhibition.—We have just received a very beautiful chromo-lithograph of this trophy, which most of our readers have seen and admired in the Eastern Annexe. This trophy, which is the only one in the building deserving that name, being entirely composed of substances exhibited in the class, was erected from the designs, and under the direction of Mr. Samuel Howard, of Stratford, from whom copies of the print may be obtained at a nominal price. We are sure that our readers will all desire to possess a copy of this interesting memorial.

United Society of Chemists and Druggists.—We understand that Mr. Buott, Senior, is actively engaged at Bristol, Bath, Birmingham, Liverpool, and other

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places, in forming District Associations to further the objects of this Society; and we purpose, in a future number, to report the meetings of the trade in these localities.

The Jury Award for Thallium.—The following letters have been addressed to the Editor of the *Chemical News*, Mr. William Crookes:—

“Sir,—Let me say a few words with reference to the Jury Awards to the exhibitors of thallium.

“The fact that you are the discoverer of thallium is, of course, incontrovertible. A new element is not to be discovered every day, and when such a discovery has been made and publicly announced, it is the duty of any one who has to adjudicate concerning it, to take care that no mistake occurs. The Jurors of Class II., being for the most part foreigners by birth, should have avoided being guilty of so grave an injustice to an Englishman. How is it that all the medals and honourable mentions awarded for lollipops and bear's grease are faithfully recorded, while a discovery of the largest interest is completely ignored? Who is to blame? Was the omission the fault of the Jurors or the printer? Did forgetfulness, or carelessness, or ignorance, or, worse still, did prejudice occasion the error? Have you seen the “copy” furnished by the Jurors to the printer?

“One word more. The Jurors have neglected, not only to offer you an apology, but to repair the consequences of their blameworthy neglect. The medal in itself is worth nothing; the due and full statement of its having been awarded is everything. The least that could have been done would have been to have inserted in every copy of the Book of Awards sold since the receipt of your letter to the Commissioners, a slip of paper with the nature of the omitted award described thereon. The defective record is being reprinted in a hundred papers.—I inclose my card, and remain yours, &c.,

“SPECTROSCOPE.”

“Sir,—All British chemists, and, indeed, chemists of all nations, including, I should think, M. Lamy himself, will strongly sympathise with you in your dispute with the Commissioners of the International Exhibition. A gross injustice has been done, not only to you, but to the country. One's criticism is certainly to a great extent disarmed by the admission on the part of the Commissioners that the omission of your name was an inadvertence. But how that could be it is hard to see. The lists, one would suppose, were revised by the Jurors, or, at all events, by some responsible person who had the reports of the Jurors to refer to; and how it could happen that the names of persons who were awarded medals were omitted, and the names of persons who had nothing in the Exhibition inserted, is most extraordinary. Great carelessness must have been exhibited by somebody, who, if blunderers received a medal, was certainly deserving of one.

“You may rest assured, that notwithstanding the mistake avowed, your claim to the discovery of the new metal will never be disputed. I would not, nor would you, I am sure, wish to detract in the least from M. Lamy's claim to an award. He was fortunate in being able to command an unlimited supply of a source of the metal, had large means at his command for working it, and showed great industry in availng himself of these means, and he certainly produced a fine specimen of the metal, a specimen which placed the existence and individuality, as one may say, of the element beyond dispute, and thereby, I contend, settled uncontestedly your right to the honour of a medal.

“One is happy to learn that the great chemists of Europe, who constituted the Jury of Class II., are not responsible for the omission, the blame of which, I suppose, will be laid on that unfortunate Register Clerk, and the apparently blind Deputy Commission, as in the case of the Messrs. Muspratt.—I am, &c.,

“AN ENGLISH CHEMIST.”



W. M.—*Freeman's Itch Ointment*.—Can any of our correspondents inform W. M. how this preparation is made, or any other of equal efficacy?

R. J. M., Carrick-on-Suir.—We should think the appointment in question was made by the county authorities.

Cough Mixture.—A subscriber, in our last number, asked for a good and cheap cough mixture. B. A. A. kindly gives the following, which he has found very useful:—Take Ext. Glycyrrh. $\frac{3}{4}$ ij.; Saech. fusc. $\frac{3}{4}$ iv.; Aqua bull. Oiiss; Ant. Pot. Tart. gr. xv.; Tinct.

Opii 3vj. ; Potass. Nitras 5xij. Dose for children, half to one tea-spoonful; for adults, from one to two tea-spoonfuls.

Parish Dispensing.—In reply to a question asked in our May number, B. A. A. states that contracts pay very well at the following rate, always supposing that Quinine and expensive chemicals are excluded:—Country Benefit Clubs, £5 per 100 members. Asylums, 1s. 6d. per head, without external applications, as blisters, embrocations, &c.; 2s. per head per annum will pay, including all.

Book of Receipts (C. F. B.)—We should advise you to procure Cooley's "Cyclopaedia of Practical Receipts," published by Churchill, price 26s. The 1,350 pages of this excellent work will furnish you with all the information you can possibly require.

Laughing Gas (G. H.)—Nitrate of Ammonia is gently heated in a flask or retort, to a temperature not exceeding 250°, when it puts on the appearance of ebullition, and is entirely decomposed into water and nitrous oxide, or laughing gas. The latter may be collected over brine, warm water, or mercury. When the temperature of the fused salt is allowed to get too high, a much more complex decomposition ensues, attended with the evolution of white fumes of nitrate and nitrite of ammonia and of nitrogen, nitric oxide, and ammoniacal gases. Moreover, this decomposition is sometimes attended with explosion. The nitrate of ammonia employed to yield laughing gas should be free from any trace of chloride of ammonium, otherwise the product will be contaminated with chlorine. Any manual of chemistry will give you information respecting the preparation of the principal gases, their action, properties, and uses. Fowne's "Manual" is one of the best works for a student. We have never found any difficulty in removing Indian-ink from the skin with soap and water.

Book of Prescriptions (A. B. C.)—We think you will find what you require in Beasley's "Book of Prescriptions," which contains 3,000 prescriptions collected from the practice of the most eminent physicians and surgeons, both English and foreign. The price of this work is 6s.

Aerated Waters (T. G. G.)—Formulae for all the different aerated waters are given in Beasley's "Druggist's Receipt Book."

—*—* We cannot undertake to attend to anonymous communications, or to answer queries through the post.



To the Editor of the *Chemist and Druggist*.

Kensington, September, 1862.

SIR,—As I have endeavoured so to regulate my tariff that no one could accuse me of charging higher or lower than my neighbours, I naturally feel annoyed, when told by customers that my prices exceed those of other members of the trade. Of late I have had to listen to so many complaints, that I have been led seriously to reflect whether it will be possible to obtain a livelihood with a chemist and druggist's returns, when our profits are cut down to those of grocers, haberdashers, or oilmen. The conclusion I have arrived at is, that our profits are already too small in proportion to our returns, and that from the very nature of the business these returns cannot be increased by competition. The facts and arguments upon which this opinion is founded are worthy of the consideration of every member of the trade; and, with your permission, I will now place them before the numerous readers of the *Chemist and Druggist*.

The late Mr. Shoolbred, who established the largest retail draper and hosier's business in London, was content with 7½ per cent. on his returns; but then those returns amounted in one day to the whole return of a first-class chemist and druggist for one year. The system of cutting or low prices introduced by chemists and druggists will never lead, in a general sense, to an increased demand for, or consumption of, physic. People never deny themselves the questionable luxury of medicine, when they find that they absolutely require it; nor will they be induced to indulge gluttonously therein, simply because they find it cheap. With articles of food, raiment, household utility, or personal ornament, low charges are beneficial, both to the consumer and vendors, by enabling the former to gratify all their wants, luxuries, or otherwise, upon a more extensive scale; and the latter to live and thrive upon small profits, by reason of the greatly increased demand for their articles, and consequently correspondingly increased returns.

Surely increased responsibility gives a valid claim to increased remuneration. Pharmacy at the present time, in reference to dispensing especially, has become a very grave and responsible duty. A man, though gifted with clear intellect and sound discretion, and possessing a thorough knowledge of his business or profession, cannot, after all, claim exemption from that common imperfection of humanity—fallibility, and is liable to mistakes which may utterly ruin his prospects. The smallest portion of common sense possessed by the meanest understanding ought to suggest that the possibility of such a catastrophe, destroying as it would a man's business, should at least have some consideration in the regulation of a chemist and druggist's profits.

"Alleged neglect in supplying poisons."

The above heading I find in the *Pharmaceutical Journal* of June 1, 1862, and what do I gather therefrom? Another instance of serious responsibility, and its attendant train of exposure, anxiety, and expense. A chemist and druggist, or, in other words, one of our ill-paid, responsible, unfortunate selves, sold a box of pills, the cost of which was the price of a quarter of a pound of six shilling tea, being just eighteenpence. Now, what was the consequence? The worry and anxiety of an action in the Bail Court (*Dungay v. Quiller*); the poor chemist having to put in an appearance, and out of his profit upon the eighteenpenny box of pills pay two counsel, Mr. Sergeant Parry and Mr. Lumly Smith; and be it remembered, not having been forced to this extremity until (although innocent) he had offered to compromise the affair, by paying something towards the plaintiff's expenses; notwithstanding, as the verdict showed, and as I repeat, he was innocent. But as the verdict did not, as I believe I have a right to assume from the report of the trial, "carry costs," the profit upon the eighteenpenny box of pills could not have gone far towards covering the expenses of our poor unfortunate contemporary in this miserable affair; which, after all, only sprung out of a business transaction that occurs a dozen times a day over every chemist and druggist's counter.

And yet the short-sighted fraternity, in regulating their prices, and estimating their profits, appear strangely, and I may say conventionally blind to such—not merely possible, but probable contingencies! It is not long ago since a chemist and druggist, conducting a business in the neighbourhood of Covent-garden, was mulcted to the amount of £400, simply because a servant, by mistake, took off the counter the wrong bottle. Again, all can remember the case of a druggist who suffered imprisonment in Yorkshire, upon being convicted of "man-

slaughter," in consequence of selling a shilling and three-halfpenny box of Morrison's pills. Numerous other cases equally calamitous might be cited; and yet with all these responsibilities and risks we are hastening, fast hastening to drapers' profits, forgetting that drapers can live upon small gains, though not so the druggist; because whilst the former is taking his pounds in abundance, the latter is scarcely collecting his pence, and at the same time involving himself in the hazard of seriously expensive liabilities.

And why are the great magnates of the west, the Godfreys and Cooks, the Savorys and Moores, and other firms of equal public repute, suffered to make high, in some instances almost fabulous charges, and actually encouraged therein—as manifested by the extensive patronage they enjoy—when other chemists, especially the *suburban*, by a blind and mistaken policy, lower their reputation, and lessen their means of subsistence, by adopting a lower scale of tariff, I may indeed say a *downward sliding scale*. Is it wise to impress the public with a notion that pure drugs and chemicals are confined to localities, and can only be had in Conduit-street or Bond-street? Such really must be the inference drawn by a rational and reflecting mind, as it must naturally occur why are not the charges of both upon a par, if the preparations be equally good?

But I maintain the worst state of things has not arrived with the *downward sliding scale*? A system of competition once introduced amongst the members of a business (which, for reasons I have shown, will not admit of low prices) will, as is invariably the case, go on increasing, until the honourable members of the Pharmaceutical Society will, in their struggle for customers, be compelled to stoop to the humiliating device of exhibiting buttermen's tickets in their shop windows. Happily poor Jacob Bell, who strived so hard and so manfully to raise the fraternity in the public estimation, and whose life may be said to have been sacrificed in the cause, has been spared this great scandal and mortification by his premature death. But even in the neighbourhood in which I write, the "Court suburb," the buttermen's tickets are already becoming visible.

A chemist on the extreme border of the western suburb advertises his shop to be the "*cheapest in Hammersmith for pure drugs and chemicals*," and, by way of confirmation, informs the public that a "blue pill and black draught can be had for four-pence!" (Vide *West London Observer*, 21st June.) Now, does our enterprising and pushing contemporary "*soothe himself into a dream*" that the wary and somewhat fastidious public will be induced

to forego their draught stout, and substitute so revolting a liquor as black draught, simply because he advertises a cheap tap? Passing lately through the Borough, a chemist's window met my eye, full of tickets, and amongst others I found one informing the passers-by that a box of seidlitz powders could be had for a shilling, or three boxes at the rate of "tenpence each." Thus, no doubt, our sagacious brother of the "cheap" black draught order speculated on the certainty of such a seductive offer leading to a three-fold consumption of that elegant saline aperient, and that people would indulge therein, irrespective of necessity, just because he held out the tempting bait of cheapness. In the window of another of the fraternity, who professed to be "late assistant to the founder of the Royal Pharmaceutical Society of Great Britain," camphor cakes were ticketed twopence each, and various other articles and preparations correspondingly low; in a word, "Shoobred" tariff fashion, but, alas! not leading, nor ever likely to lead, as I have already endeavoured to show, to a Shoobred result, as to extension of trade; for, I repeat, physic, however "cheap," will never be consumed in a greater quantity because it is cheap. Its very nature forbids the application of the trading principle, that low charges result in increased consumption, and that consequently smaller profits will pay. To apply *that* principle to the drug trade can only be the result, on the part of some of its members, of an extraordinary oversight, as to its peculiar or rather exclusive nature, as distinct from all trades, callings, or crafts, and must in the end prove a ruinous fallacy. It has been insinuated by a distinguished and zealous member of the Pharmaceutical Society, that this ruinous condition of things is the result of the reckless conduct of those whom he is pleased to term the outsiders; that is to say, those who have kept aloof from the Society. This my long observation enables me most emphatically to deny. How is it that this ruinous competition, in connexion with the trade, was not known when *all* were "outsiders," or, in other words, when no Pharmaceutical Society existed? In those halcyon days it was scarcely a joke when it was asserted a chemist's profits amounted to elevenpence three-farthings out of a shilling. One word more in reference to the refining labours of the Pharmaceutical Society, the leading members and upholders of which appear to be working for the public exclusively; for while furnishing society, at great individual outlay, with a superior class of men, they seem to forget that the public are bound to pay in proportion to the high qualifications of those whose efficient services they profit by. But this appears to be

quite lost sight of. And I beg to remind them that, as in a spiritual sense "man cannot live by bread alone," neither can he, in a secular sense, live by science alone. In a word, he *must be paid*; for who dare gainsay the high authority that declared the labourer to be worthy of his hire?

As to prices, I admit there may be exceptional cases; for instance, in poor localities, such as Clerkenwell, Whitechapel, and some parts of Lambeth, a low tariff is unavoidable; and, without impugning the quality of the drugs and chemicals sold in such places by our contemporaries, I believe such low prices may be afforded by reason of rents and other expenses being correspondingly small. But why throw away the advantages enjoyed by being established in neighbourhoods such as Bayswater, Notting-hill, and Kensington, inhabited almost exclusively by the wealthy, and where palatial mansions may be said to be daily springing up, with a rapidity unprecedented in the annals of building. Is it not manifest by the westward migratory movement of two great west-end establishments, that they are impressed with this very fact, and desire to share the promising harvest? Then is it wise, on the one hand, by lower charges, to impress the public mind with the notion that our preparations are inferior to theirs, and on the other, to throw away the opportunity we possess of encouraging and turning to profitable account the patronage of a superior class of customers, by lowering our tariff to that of such poor neighbourhoods as I have just alluded to?

I am old enough to remember when the pharmacopeia of the Royal College of Physicians was, as regards preparations, the rule of prescribing, and not, as *now*, the exception. Preparations were then comparatively harmless and inexpensive, consisting chiefly of vegetable infusions, decoctions, proof spirit tinctures, syrups, oxymels, together with simple and compound powders, and various waters, &c. Pharmaceutical genius did not then dream of running rampantly wild in search of endless therapeutic agents or remedies, irrespective of costly price to the chemist, or hazard of the patient's life, involving the dispenser's reputation, and possibly his liberty! Deadly poisons were not then, as now, administered for the recovery of health; and remedies so extravagant in price as to leave no margin for profit, were, happily for the chemist, unknown. I say happily, for disease was not more fatal then than now, and the remedies rarely by misadventure involved the patient's life or the dispenser's reputation. Chemists may be said to dispense their poisons with the terrors of the law suspended over their heads, like the sword of Damocles; and, as frequent experience has proved, a man may one day rise from

his bed comparatively well-to-do in a worldly sense, and ere night apprehensions of the verdict of a coroner's jury convicting him of "manslaughter" may, by a too well-grounded anticipation, destroy all his hopes. I here repeat, that in regulating a chemist's charges his fearful responsibility, involving as it does such a terrible possibility, should not be forgotten! In support of the foregoing observations, I will mention a modified case that occurred in my own neighbourhood but a very short time since. A man-servant walked into my museum of pharmaceutical poisons, and asked my opinion as to the contents of a phial he produced. I told him, upon examination, that it contained "essence of bitter almonds," or what is commonly called "almond flavour." My attention was then directed to the label, which I found *erroneously* intimated that the bottle contained "essence of peppermint." Of course, here was a *mistake* which might have been of serious consequence, as the party purchasing desired and supposed he had got the latter preparation. The servant told me that his master desired him to say that he was resolved to seek redress at the hands of the druggist through whose negligence he had run the risk of sustaining injury, if not losing his life, and that for the future he would transfer his patronage to me. Now let me observe that this promise of custom, under such circumstances, afforded me no satisfaction, because I well knew that, while I could no more lay claim to infallibility than others, the same misfortune might befall me.

Once again, on the subject of low prices, let me quote a late highly-respected contemporary, Mr. Gloyne. Conversing with that gentleman upon the important topic, when he had been unjustly accused of vending "cheap physic," he, with becoming indignation, said it was untrue, assuring me that he had ever been an advocate for remunerative profits, adding emphatically, "Why, if all our returns were clear gains, our incomes would be beggarly." Upon another occasion, when speaking to the Collector-General of the Queen's taxes, that functionary informed me that out of forty chemists and druggists in a fashionable and wealthy town on the southern coast, only four paid income-tax. How, then, can a business, the average returns of which are so truly insignificant, admit of such reckless and thoughtless abatement of charges as are continually being made, and to which, while there appears no prospect of a termination, will never lead to an increased demand?

For instance, will more spirits of sal volatile be consumed by the nervous portion of the public because some honourable members, by examination and otherwise, of the Royal Pharmaceutical Society have lowered the price to 4d. an ounce—just one-half of

the price charged by the leading west-end establishments—a preparation much taken, only in drops, usually from twenty up to sixty? Now, a pint of Allsop's pale ale may be purchased for the same sum, but it must not be forgotten the latter is rapidly absorbed at a single meal, and the publican will in all probability be called upon to furnish another pint for the consumer's supper. Not so the druggist's ounce of sal volatile, for it is more than probable that at the end of a month or six weeks a large remnant of the four pennyworth will be found in the phial. Has the consumption and therapeutic object of an article or preparation nothing to do in the regulation of the price and profit upon it. After writing the last paragraph, I took up the *Daily Telegraph* published on the 29th May, 1862. I give the date in order that by a reference my quotation may be confirmed. Amongst other advertisements, in that widely-circulated journal, I found one to this effect:—

"To Chemists and Druggists. For disposal, a business at Peckham, receipts £200; Stepney, receipts £100; Islington, receipts £200; near Islington, receipts £300; Kent Road, receipts over £200; Pimlico, receipts nearly £300; Rotherhithe, receipts £400. For further particulars apply to Mr. Powell, 39, Moorgate-street, City, E.C."

Could a better endorsement be obtained to what Mr. Gloyne asserted, or the Collector-General of the Queen's taxes assured me, than the preceding advertisement?

To show how rapid is the descent of the "sliding scale" downwards, and how difficult it is to "ease her" or "stop her" when once the steam is up, I will just give a few prices I copied from amongst about thirty in a chemist and druggist's window, not a sixpenny cab fare from Union-street, Southwark: "Blue pill and black draught, 4d.; four blue pills and four black draughts for ls.; pills, 3d. per dozen; capivi mixtures, 6d. each; cochineal, 4d. an ounce; seidlitz powders, 8d. a box, or two powders for 1½d.; ginger, 6d. per pound; pure cod-liver oil, ls. 6d. a pint!"

Does it not appear an extraordinary perversion of a sane order of things, when we find, at the very time an endeavour is being made, in accordance with a desire manifested by some of the fraternity, to elevate the trade of a chemist and druggist into a profession, or something approximating thereto—with its royal charter, president, senatorial council, and staff of professors, lecturers, and examiners, together with the greatly increased expense attending education, with its courses of lectures, laboratory attendance, and minor and major examinations, all involving fees, more or less costly—I repeat, does it not appear a strange perversion of a sane order of things, at such a time, to run counter to that spirit of pro-

[September 15, 1862.]

gress, elevation, and improvement, by introducing a system of low trading so palpably opposed to its present recently-created pretensions, and so starvingly ruinous to the interest and wellbeing of its members?

In conclusion, I will just add that the great philosopher Seneca, who was a keen searcher into the nature and moral condition of things, very justly observed, many centuries ago, something to the effect "that medicine was not to be estimated by anything approaching to its intrinsic value, but in proportion to the important intention of its use, involving, as that intention did, not merely the restoration of life's greatest blessing—health, and health's preservation, but actually the possible rescue of life from man's greatest terror—even death itself." At the same time that I am ready to endorse the preceding sentiments and opinions with my name, I entreat my brethren to allow these serious considerations to have weight in their minds, and to ask themselves, whether they think, if the public were properly admonished as to the real object for which medicine is administered, they would not attach to it that importance Seneca did centuries ago, and by appreciating its true value, pay willingly for it accordingly.

I beg to subscribe myself,
Yours very truly,
J. C.

THE PATENT MEDICINE STAMP DUTY.
SIR,—As the avowed object of your

periodical is the advocacy of the trade interests of chemists and druggists, I think your attention might be profitably directed to the above-named subject.

When living in a large manufacturing town I did a good trade in patent medicines, paying the moderate sum of 10s. per annum for license.

Having now removed to a suburb of London, I am charged for "license to sell" nearly £8 per annum. At the present rate of demand, my profits will not cover the cost of license.

Why the law should press so unequally may be made a question, and steps taken to correct the injustice.

I remain, Sir, yours respectfully,
R. S. M.

MUSK AND OTTO.—CAUTION!

To the Editor of the Chemist and Druggist.
September 11, 1862.

SIR,—I have just been offered some otto of roses and grain musk, by a peddler Jew, at less than one-third their value. The wholesale druggists have often been robbed by their servants of these and other valuable drugs, and this Jew only tells a lame story as to his possession of them, therefore a word of caution through your columns may not be out of season.

Yours, &c.
A LONDON CHEMIST.



320. J. TONKIN, Jun. *Improvements in the manufacture of gunpowder.* Dated Feb 6, 1862.

The patentee claims:—1. The manufacture of gunpowder of a compound of charcoal, sulphur, and nitre, or nitrate of soda with vegetable fibre converted into gun cotton, or a substance analogous thereto. 2. The manufacture of gunpowder of a compound of charcoal, sulphur, and nitre, or nitrate of soda with fibre. 3. The granulating gunpowder by a machine, consisting of an expressing cylinder or vessel, combined and working in conjunction with a die and endless apron, as described. *Patent completed.*

338. M. A. F. MENNON. *Improvements in the treatment of coprolites and other fossil phosphates of lime.* (A communication.) Dated Feb. 10, 1862.

This relates to a method of treating coprolites and other calcareous phosphates, by

which these minerals are converted into assimilable manure, and at the same time are rendered applicable to the disinfection of certain animal products, and to the extraction therefrom of fertilising principles. The nodules or rocky phosphates to be operated on are first pulverized as finely as possible by any suitable machinery, and with the powdered mass is intimately incorporated from six to ten per cent. of organic matter, highly charged with hydrogen and carbon, say, for instance, the pitch or tar produced during the distillation of coal in gas manufacture. The mixture is then calcined at a temperature of from 400° to 500° (Centigrade) in closed and luted kilns, retorts, or other suitable capacities, each containing a minimum of four hundred weight. In this the tarry matter is decomposed, the hydrogen unites with the sulphur of the sulphate of iron, forming sulphuretted

hydrogen, which is thrown into the furnace, and there consumed. The carbon reduces the metallic oxides, divides the molecules, and assists the conversion of the sulphurets into carbonates, which afterwards pass to the state of oxides, the carbonate of lime especially being converted into oxide of calcium (quicklime). The water and carbonic acid are driven off, and the excess of carbonaceous matter takes their place. When the disengagement of gas ceases (generally in from half an hour to an hour with the quantity above noted), the operation is suspended, the product is withdrawn from the recipient, and placed to cool in sheet-iron dampers. *Patent completed.*

451. E. M. STOCHR. *Improvements in the manufacture of manganese, and in the combinations of manganese with other metals.* (A communication.) Dated Feb. 20, 1862.

Here the manganese ore is pulverized and

reduced into pulverized charcoal, or other carbonaceous substance, in a crucible; the necessity of producing soluble salts of protoxide of manganese, and the dissolving of the ore by acids, as was heretofore requisite, is thus obviated. The manganese metal produced is hard, tough, and does not oxidize by exposure to the air. Manganese, when manufactured as above described, may be used for many practical purposes. The second part of this invention consists in combining manganese with copper, zinc, tin, nickel, iron, steel, and other metals or alloys of metals, in order to produce metallic compounds for various manufacturing and metallurgic purposes. These compounds are produced by melting the manganese together with the metal or metals in crucibles, the proportions depending upon the particular purpose for which the metallic compound is required. *Patent abandoned.*

CLOSING FRUIT JARS.—For the preservation of all kinds of fruits, use glass bottles or jars. Select those of even thickness, or rather of even thinness, for they are often exposed to considerable heat, and while they should not be so thin as to break in common handling, or burst from internal pressure caused by fermentation, still they should not be thick, or of pressed glass, when blown-glass jars can be readily obtained. So much for the bottles. Now as to closing them air-tight, we know corks will not do it. The very structure of the substance is against it, unless cork of the most velvety character is obtained, and this is costly. We recommend waxed cloth tied over the jar as a substitute at once cheap and effective, and have never found anything superior to it. Prepare the cloth in this way:—Melt together some resin, beeswax, and tallow, in equal parts; tear the cloth in strips four inches wide, or at least wide enough conveniently to tie over the mouth of the jar, and dip these strips, drawing them through the hot wax, and stripping nearly all the wax off. With cloth thus prepared, after the jar is filled with hot preserves, and while still hot, close the mouth and bind it on with good linen cord. Then with shears trim off as much of the waxed cloth as is desirable, and then dip it in some melted wax, which should be made with only about half as much tallow. Sealing-wax may be used instead, if desired. The jars should be put where the wax will cool at once, so that the exhaustion caused by the cooling of the preserves and the condensation of the steam, may not cause the wax to run through the cloth. Nothing can be more thoroughly air-tight than bottles so prepared.—*Homestead.*

ARMY MORTALITY.—A comparison of the rates of mortality in the various European armies shows the satisfactory condition of the British army in this respect, in consequence of the late improvements. Out of 10,000 men, the mortality is in the Russian army, 390; Austrian, 280; French, 190; Piedmontese, 160-170; English, 150; Belgian, 143; Prussian, 70; and in the Danish and Saxon armies about the same rate prevails. Considering, however, the superiority of food and clothing in the British army, its sanitary condition admits of considerable improvement.

THE PATENT PLUMBAGO CRUCIBLE COMPANY have been awarded a Prize Medal for the excellence of their "Plumbago Lustre" and other Black Leads, exhibited in Class 2. The Company are the largest importers in the Kingdom of these articles, and their prices will be found in another portion of this Journal.—(ADVT.)



THERE has been rather more business done in Chemicals during the month, without much change in price. In Tartaric Acid, sales continue to be freely made at 1s. 7½d. to 1s. 8d.; and for Citric Acid, purchasers have been larger at 1s. 7½d. to 1s. 8d. Oxalic Acid is dull, and the best is to be had at 8½d. A good demand for Sal Acetos, sales made at 10½d. Prussiate of Potass remains dull at 12d. to 12½d. Bichromate continues quiet at 7½d. to 8d. A large business has been done in Chlorate of Potass, and the price is now firm at 14d. to 15d. Iodine is rather better, sales made at 5½d. to 6d. Soda Ash is steady at 2d. to 2½d. More doing in Sulphate of Quinine at 7s. 4d. to 7s. 6d. for French. Cream of Tartar has declined to 120s. to 123s. 6d., and is dull. Soda is firm at 97s. 6d. to 100s. ex ship. Flour of Brimstone is dull at 13s. for common, up to 15s. for the best. Sulphate of Copper is dull, and nominal at 32s. Small sales of Sal Ammoniac at 36s. for seconds, and 38s. for firsts. Sulphate of Ammonia sells steadily at 14s. 6d. to 15s. Small sales of English refined Camphor made at 4s. 2d. to 4s. 4d. Saltpetre is better, sales of refined at 43s. 6d. in barrels, and 43s. in casks, for cash. Canada Pot and Pearl Ashes are rather easier. Turpentine has again advanced, and is now 135s. for American, and 120s. for French. Further sales in refined Petroleum have been made at 1s. 10d. to 2s. Large sales have been made in Linseed Oil, the prices closing at 42s. 9d. to 43s. on the spot, and 38s. 6d. to 39s. 6d. forward. Rape Oil is also more in demand, and rather higher.

In the Drug market sales have been moderate, but a fair proportion of the goods offered found buyers. Late arrivals of Ipecacuanha have been brought forward, which sold at 7s. 6d. to 7s. 9d., showing a fall of 6d. per lb. Jalap is better, some good parcels sold at 5s. to 5s. 2d. China Rhubarb is dearer, and sells more freely. Turkey Opium is about 1s. cheaper, sales of fine made at 20s. down to 15s. for common. Castor Oil is ½d. per lb. lower, good and fine pale realized 7d. to 7½d. A large business has been done in Oil Aniseed, at from 5s. 9d. up to 6s. 9d., and lately market quiet at 6s. 6d. Small sales of Citronnelle at 5½d. Balsam Capivi is about 1d. cheaper, sales made at 1s. 7d. to 1s. 8d. Oil Cassia is firm at 9s. 6d. to 9s. 9d. Bark is steady. No change in Sarsaparilla. Cubebes are held for 130s. to 135s. Some Turkey Blue Galls sold at 95s. to 100s. Large parcels of Cod Liver Oil have been offered, and held for firm prices. Extensive sales have been made in Gambia, and the price has advanced to 29s. to 30s. Cutch is much dearer, and in demand. Good Pegue sold at 29s. Shellac has met with a good sale at former rates. In Gums, some parcels of fine East India sold at 42s. to 44s. Olibanum has brought 66s. to 69s. 6d. for good pale drop. Benjamin is 20s. to 30s. higher, and sells more readily. Cardamoms had brought better prices. Allepi sold at 5s. 10d., and Malabar (good) 6s. to 6s. 8d. Only small sales made in Senna at former prices. Star Aniseeds are dearer, and in better demand. Safflower is in better request.

PRICE CURRENT.

C These quotations are the latest for ACTUAL SALES in Mincing Lane. It will be necessary for our retail subscribers to bear in mind that they cannot, as a rule, purchase at the prices quoted, inasmuch as these are the CASH PRICES IN BULK. They will, however, be able to form a tolerably correct idea of what they ought to pay.

	1862.			1861.			1862.			1861.		
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
ARGOL, Cape, pr ct.	90	0	100	0	90	0.97	6					
French	30	0	.60	0	60	0.85	0					
Oporto, red	45	0	.48	0	45	0.00	0					
Sicily	70	0	.80	0	65	0.80	0					
Naples, white.....	65	0	.80	0	65	0.80	0					
Florence, white	90	0	100	0	90	1.00	0					
red.....	85	0	.87	6	85	0.87	6					
Bologna, whitc.....	115	0	120	0	115	0	120	0				
ARROWROOT, duty 4½ per cwt.												
Bermuda....per lb.	1	0	..1	3	0	11	..1	4				
St. Vincent.....	0	3	0	6	0	23	0	6				
Jamaica.....	0	24	0	4	0	21	0	4				
Other West India.....	0	2	0	31	0	2	0	31				
Brazil.....	0	1	0	2	0	1	0	2				
East India.....	0	1	0	24	0	1	0	24				
Natal.....	0	2	0	72	0	2	0	64				
Sierra Leone.....	0	24	0	3	0	24	0	3				
ASHES....per cwt.												
Pot, Canada, 1st sort	34	6	..0	0	31	6	..0	0				
Pearl, do. 1st sort.	35	0	..0	0	36	0	..0	0				
BRIMSTONE,												
rough.....per ton	135	0	..0	0	150	0	..0	0				
roll.....	220	0	0	0	270	0	0	0				
flour.....	260	0	320	0	290	0	310	0				
CHEMICALS,												
Acid—Acetic, pr lb	0	4	..0	0	42	0	4	..0	42	0	4	..0
Citric	1	7	..1	8	1	9	..1	9	1	9	..1	9
Nitric	0	4	..0	0	5	0	3	..0	4	0	3	..0
Oxalic.....	0	8	..0	0	8	..0	0	0	8	..0	9	..1
Sulphuric	0	0	0	0	0	0	0	0	0	0	0	0
Tartaric crystl	1	7	..1	8	1	9	..0	0				
powdered.	1	8	..1	9	1	10	..0	0				
Alumper ton	125	0	130	0	125	0	130	0				
powder	145	0	0	0	150	0	..0	0				
Ammonia, Crb, lb.	0	5	..0	6	0	5	..0	6	0	5	..0	6
Sulphate per ton	270	0	290	0	270	0	280	0				
Antimony, ore	200	0	210	0	320	0	340	0				
crude, per cwt.	24	0	28	0	30	0	32	0				
regulus	43	0	44	0	50	0	50	0				
French star.....	44	0	..0	0	51	0	..0	0				
Arsenic, lump....	17	0	..18	6	17	6	..1	0				

PRICE CURRENT—*continued.*

PRICE CURRENT—continued.														
CHEMICALS.			1852.			1861.			1862.			1861.		
s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.
Arsenic powder ..	6	..	8	9	0	10	6	Cardamoms,inferior	5	0	6	2	3	10..
Bleaching Powder..	9	0	10	9	6..	10	0	Madras..	3	..	5	0	3	0..
Borax, E. I. refined	52	..	0	0	0	0	0	Ceylon..	4	2..	4	6	3	0..
British.....	50	..	0	0	63	6..	50	Cassia,Fistula pr ct.	20	0..	.52	0	22	..32
Calomel...per lb.	2	9	..	0	2	10..	0	CastorOil,lstptable,lb	7	0..	7	0	6	0..
Camphor, refined..	3	4	..	4	3	1..	3	second.....	0	0..	6	0	5	4..
Copras, grn. pr. tu.	65	0	..	0	65	0..	0	infr. & dark	0	6..	0	6	0	5..
Crrsiv. Sublmt. lb	1	11	..	2	0	11..	2..	Bombay, in cksks.	54	..	0	0	5	0..
Green Emulsion,pr.lb.	0	9	..	11	0	9..	0	Castorum.....	1	0..	.26	0	1	0..
Brunswk. cwt.	14	0	..	42	0	14..	0	China Root, pr ct.	10	0..	.15	0	9	0..
Iodine, dry, pr. oz.	0	5	..	6	0	4	0	Cannabis Indicus ..	11	0..	.15	0	12	0..
Magnesia Crbn. ct.	42	6	..	45	0	42	6..	Cod-liver Oil, gal.	4	2..	6	0	4	9..
Calcined, lb..	1	6	..	0	1	6..	0	Clymphyt, apple,lb.	0	7..	1	0	0	8..
Minium red,pr.ct	22	6	..	23	0	21	6..	Colombia RT, pr.ct.	15	0..	.52	6	15	0..48
orange.....	33	0	..	35	0	35	0..	Cream Tartar,pr.ct.						
Ptsh. Bichrom. lb.	0	7	4	..	8	0	9	French	120	0	122	6	120	0..0
Chlorate.....	1	2	..	1	3	0	10	Venetian	120	0	122	6..	122	0..0
Hydriodate oz.	0	5	..	6	0	5	0	grey	112	6	115	0	112	0..0
Prussiate ..lb.	1	0	..	1	0	1	1..	brown.....	105	0	110	0	107	6 112
red..	2	1	..	2	2	2..	0	Croton Seed	45	0..	.65	0	90	0 105
Precipit. red.pr. lb	2	9	..	2	10	2..	10	Cubbs	130	0..	0	0	150	0..0
white...	2	9	..	2	10	2..	10	Cumin Seed	33	0..	.40	0	36	0..40
Prussian Blue.....	1	6	..	1	10	1..	10	Dragon's bld. reed.	200	0	320	0	200	0 240
Rose Pink...pr ct.	29	0	..	30	0	29	0..30	lump...	90	0	300	0	170	0 200
Sal-Acetos...pr.lb.	0	10	..	0	0	11	0	Galangal Root	30	0..	.35	0	16	0..22
Ammoniac, ct.								Gentian Root	21	0..	.22	0	14	0..17
British.....	36	0	..	35	0	32	6..	Guinea Grains,....						
Epsom	8	0	..	8	6	8	3..	percwtt.	48	0..	.50	0	48	0..50
Glauber	5	0	..	5	6	5	6..	Honey, Narbonic	60	0..	.84	0	60	0..85
Soda, Ash, pr deg..	0	2	0..	2	0	2	0..	Cuba	24	0..	.36	0	25	0..40
Bicarbonate ..ct.	12	6	..	13	0	13	0..	Jamaica	26	0..	.65	0	26	0..45
Crystals per ton ..	0	9	..	9	6	85	0..0	Ipecacuanha,pr.lb.	7	0..	.7	9	4..	0..4
Sgr. Lead, white, ct.	37	0	..	40	0	37	0..38	Isinglass, Brazil..	10	0..	3	10	1	6..
brown.....	25	0	..	9	0	28	0..0	East India	9	0..	3	0	1	0..3
Sulphite. Quinine oz								West India	3	0..	3	0	3	3..9
British in bttl.	7	9	..	8	0	7	2..	Russian.....	9	6..	.13	0	9	6..13
Foreign	7	4	..	7	6	6	9..	Jaipal	1	9..	5	2	1	6..4
Sulphite Zinc, cwt.	14	6	..	15	0	14	6..	Jaiper Berries,ctw.						
Verdigris.....lb.	1	3	..	1	5	1	3..	German & Frnch	9	0..	.11	0	10	0..10
Vermillon, English ..	2	8	..	3	6	3	0..3	Italian	10	0..	.12	0	9	6..12
China	2	3	..	2	4	2	3..	LimonJuice,prdeg.	0	0	..	0	0	1..
Vtrl. blue or Rmn.								Liquorice, percwtt.						
per cwtt.	32	0	..	33	0	31	6..	Spanish	33	0..	.90	0	83	0..90
COCHINEAL, pr. lb.								Italian	85	0..	.95	0	85	0..95
Honduras, black..	2	6	..	4	2	2	10..	Manna, falky	2	0..	2	6	3..	3..9
silver.....	1	5	..	3	4	2	2..	small	1	6..	1..	9	1	6..2
Mexican, black... ..	2	7	..	3	0	2	6..	Musk,...per oz.	20	0..	30	0	26	0..34
silver ..	2	5	..	2	6	2	4..	Nux Vomica	8	0..	9	0	8	0..8
Lima	2	7	..	3	1	2	7..	Opium, Turkey	12	0..	.20	0	17	6..18
Teneriffe, black ..	2	7	..	3	4	2	9..	Egyptian	6	0..	.12	0	6	0..13
silver ..	2	6	..	2	7	2	7..	Orris Root, pr.cwt.	28	0..	.30	0	27	0..29
DRUGS,								Pink Root, pr.cwt.	3	..	3	6	1..	9..11
Alocs, Hepatic, ct.	130	0	..	200	0	120	0	Quassia(lif. wdty) ..	90	0..	110	0	70	0..80
Socotrine	160	0	..	480	0	150	0..480	Rhatanaria Root, Ib.	0	9..	..1	6	0..10	0..1
Cape, good	40	0	..	43	0	40	0..44	Rhubrb. China,rnd.	1	9..	..4	6	0..10	..2
inferior	20	0	..	36	0	20	0..38	flat	2	2..	..4	9	1..9	..2
Barbadoes... ..	60	0	..	420	0	60	0..420	Dutch, trnd.	4	6..	..4	9	3..	0..3
Ambergris, gray ..								Russian	7	..	10..	0	11	6..0
per oz.	30	0	..	35	0	34	0..40	Saffron, Spanish	45	0..	.47	0	53	0..54
Angelica Root, ct.	20	0	..	35	0	25	0..35	Sailep	130	0..	160	0	220	0..240
Anisced, China str.	30	0	..	88	0	65	0..78	Sarsaparilla, Lima	0	10..	..1	5	0..10	..1
German, &c.	20	0	..	40	0	26	0..44	Para	0	10..	..1	2	0..10	..2
Balsam Canada, lb	1	3	..	1	4	1	4..	Honduras	0	10..	..1	4	0..11	..1
Capivi	1	7	..	1	8	1	8..	Jamaica	1	4..	..2	6	1..3..	..5
Peru.....	5	0	..	5	2	4	7..	Sassafras	11	0..	12	0	10	0..12
Tolu	4	0	..	4	1	3	9..	Scammony, pr. lb.						
Bark Cascarilla ct.	23	0	..	40	0	24	0..49	virgin	28	0..	.36	0	28	0..34
Peru crown & grey								second	14	0..	.24	0	14	0..24
per lb.	1	0	..	2	4	1	2..	Seneka Root	14	6..	..4	9	2..	8..2
Calisaya, flat...	4	3	..	4	6	3	6..	Scunra, Calcutta	0	13..	..0	2	0	1..2
quill	3	9	..	4	2	3	4..	Bombay	0	21..	0	3	0..2	3..4
Carthagegena...	1	3	..	2	6	0	10..	Timnewelly	0	4..	..1	0	0..24	0..3
Pitayo	1	10	..	2	9	1	6..	Alexandria	0	3..	..0	6	0..4..	6..2
Rcd	2	6	..	6	2	0	6..	Snake Root	2	6..	..2	9	1..8..	1..9
Bay Berries, pr ct.	22	0	..	40	0	22	0..40	Sperm-aceti,refined	1	0..	..1	2	1..1..	2..2
Bucca Leaves, lb	0	3	..	1	6	0	3..	Squills	0	1..	..0	2	0..1..	0..2
Camomile Flowers ..	50	0	..	75	0	30	0..60	Tamarinds, B. Ind.	10	0..	12	0	9..0..12	0..0
Camphor, China	340	0	..	0	0	240	0..0	W.L. per cwt.	15	0..	.33	0	16	0..32
Canella Alba	19	0	..	40	0	20	0..40	Valerian Root, Eng	20	0..	40	0	20	0..40
Cantharides, pr. lb.	3	0	..	3	3	2	1..2..	Terra Japonica—						
Cardamoms, Mlbar. good.....	6	6	..	6	8	4	2..	Gambier, cwt	26	6..	..27	0	17	0..18
								Cutch, cwt	28	6..	..29	0	21	0..23

PRICE CURRENT—continued.												
	1862.				1861.							
DRUGS.	s.	d.	s.	.	s.	d.	s.	d.	s.	d.	s.	d.
Vanilla, Mexicau lb.	25	0	.55	0	20	0	.45	0	Citroncl.	0	54	0
Wormseed, pr cwt.	2	0	..	0	2	0	..	0	Clove	0	4	0
GUM, per cwt.									Croton	0	3	0
Ammoniac, drop..	100	0	125	0	70	0	105	0	Juniper	1	10	..
lump ..	15	0	.65	0	15	0	.40	0	Lavender	2	6	..
Animi, fine pale ..	300	0	320	0	290	0	310	0	Lemon	4	0	..
bold amber ..	200	0	280	0	260	0	270	0	Lemongrass, pr oz	0	44	0
medium ..	170	0	200	0	170	0	230	0	Mace, ex	0	12	0
small & dark ..	100	0	125	0	100	0	160	0	Neroli	6	0	..
ordinary dark ..	40	0	.80	0	50	0	100	0	Nutmeg	0	14	0
Arab. El.f.palepkd	50	0	.58	0	43	0	.52	0	Orange .. per lb.	5	0	..
unsord, good to f	32	0	.45	0	36	0	.44	0	Otto Roses, per oz.	14	0	.23
red and mixed ..	20	0	.30	0	28	0	.34	0	Peppermint, pr lb.,			
siftings ..	0	0	..	0	18	0	.23	0	American ..	7	6	..
Turkey, pkd. gdto f.	115	0	180	0	110	0	150	0	English ..	83	0	.34
second & infr.	40	0	110	0	42	0	105	0	Rhodium .. per oz.	3	9	..
in sorts ..	30	0	.40	0	30	0	.43	0	Rosemary .. per lb.	1	10	..
Gedda ..	26	0	.23	0	24	0	.26	0	Sassafras ..	3	0	..
Barbary, white ..	32	0	.40	0	30	0	.32	0	Spearmint ..	5	0	..
brown ..	28	0	.30	0	26	0	.27	0	Spike ..	1	3	..
Australian ..	23	0	.25	0	16	0	.18	0	Thyme ..	1	9	..
Assafet. fr. to gd.	30	0	110	0	20	0	.95	0	PITCH, Brtsch, pr cwt.	11	0	..
Benjamin, 1st, qual.	400	0	600	0	360	0	680	0	Swedish ..	12	0	.13
2nd qual	280	0	410	0	160	0	330	0	SALT PETRE, pr cwt.			
3rd ..	50	0	190	0	60	0	150	0	Engl, 6 p.c. or under	40	0	.40
Copal, Angola red ..	100	0	110	0	100	0	125	0	over 6 per cent.	33	0	.39
pale ..	97	6	105	0	85	0	105	0	Madras ..	35	0	.37
Benguela ..	110	0	130	0	85	0	110	0	Bombay ..	35	0	.36
Sierra Lneib ..	0	10	..	10	0	7	1	British-refined ..	43	0	.43	
Manilla pret	20	0	.43	0	12	0	.40	0	Nitrate of Soda ..	13	0	.14
Dammar pl. pret	42	0	.50	0	42	0	.49	0	SEED, Canary, pr qr.	36	0	.54
Galbanum ..	100	0	120	0	120	0	160	0	Caraway, Eng, p.c.	0	0	..
Gmbge, pkd. pipe	140	0	180	0	120	0	150	0	German, &c ..	0	0	..
in sorts ..	80	0	120	0	80	0	110	0	Coriander ..	0	0	..
Oilbatum, pl. drop ..	65	0	.67	0	58	0	.70	0	East India ..	0	0	..
ambr & yel ..	45	0	.64	0	40	0	.56	0	Hemp ..	46	0	.50
mixd. & dk. ..	10	0	.30	0	13	0	.23	0	Limed, Black Sea ..	62	0	.65
Senegal ..	38	0	.40	0	42	0	.46	0	Calcutta ..	66	0	.66
Sandrac ..	75	0	100	0	90	0	100	0	Bombay ..	70	0	.71
Tragacanth, leaf ..	180	0	340	0	182	0	330	0	Egyptian ..	58	0	.60
in sorts ..	100	0	130	0	100	0	130	0	Mustard, brn, p. btl ..	0	0	..
OILS, per tun.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.	white ..	9	6	..
Seal ..	47	0	.47	10	33	0	.40	0	Poppy, E.I. pr qr.	58	0	.59
Sperm, body ..	85	0	..	0	93	0	.94	0	Rape, English ..	0	0	..
Cod ..	43	0	.44	0	35	0	0	0	Danube ..	71	0	.72
Whale, Greenland ..	0	0	0	0	0	0	0	Calcutta, fine ..	66	0	.67	
Sth Sea pale ..	39	0	.42	0	32	0	.35	10	Bombay ..	69	0	.69
E. I. Fish ..	37	10	.33	0	29	10	.30	0	Teel, Sesame or Gingy ..	66	0	.73
Olive, Galipoli, ton ..	57	10	..	0	58	0	.60	0	Cotton .. per ton	160	0	0
Florence, 4-chst ..	1	0	..	1	2	0	.19	0	Gnd, Not Krsnals, tn ..	350	0	.360
Cocoant, Cochin, tn ..	55	8	.56	0	44	6	.45	0	SOAP, Lndy, yel, pr ct ..	21	0	.36
Ceylon ..	53	6	.54	0	43	6	.44	0	mottled ..	34	0	.36
Sydney ..	46	0	.53	0	39	0	.43	0	curd ..	50	0	0
Ground Nut & Gln.									Castile ..	38	0	.40
Bombay ..	48	10	.49	0	39	0	.41	0	Marseilles ..	40	0	.40
Madras ..	49	0	.50	0	41	0	.43	0	SOY, China, per gal.	2	7	..
Palm, fine ..	43	0	.43	6	42	10	..	0	Japan ..	0	10	..
Linsed ..	42	3	.42	6	33	6	..	0	SPONGE, Turk, f, pkd ..	20	0	.24
Rapesd, Engl pale ..	50	6	..	0	48	0	..	0	fair to good ..	8	0	.18
brown ..	48	6	..	0	41	0	..	0	ordinary ..	3	0	..
Foreign do ..	51	0	..	0	44	6	..	0	Bahama ..	0	4	..
brown ..	48	6	.49	0	40	6	.41	6	TURPENTINE,			
Lard ..	49	0	.50	0	54	0	..	0	Rough, per cwt.	0	0	..
Tallow ..	40	0	.41	0	40	0	..	0	Spirits, English ..	0	0	..
Rock Crude ..	13	0	.13	6	0	0	..	0	American, Insects ..	135	0	..
OILS, Essential—									Spices, English ..	0	0	..
Almond essen. lb.	19	0	..	0	20	0	..	0	urine upon			
expressed ..	0	0	..	0	0	1	0	0	stratify			
Anisced ..	6	6	..	0	7	3	0	0	demonstrate			
Bay .. per pr cwt.	110	0	120	0	122	6	..	0	gather son			
Bergamot, pr lb ..	5	6	..	12	0	6	..	0	the law in			
Cajeputa, bond, oz ..	0	24	0	3	0	14	0	12	otherwise,			
Caraway .. pr lb ..	4	3	6	0	4	3	0	0	otherwise,			
Cassia ..	9	5	..	9	6	10	6	0	cognizant			
Cinnamon (in b.) oz ..	1	6	..	4	0	1	6	..	ostensible			
Cinnamon Leaf ..	0	3	..	0	4	0	2	..	debt, M.			